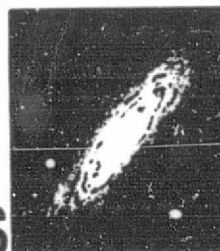


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HIGH-ALTITUDE SATELLITES, DAYS 1-181 1977
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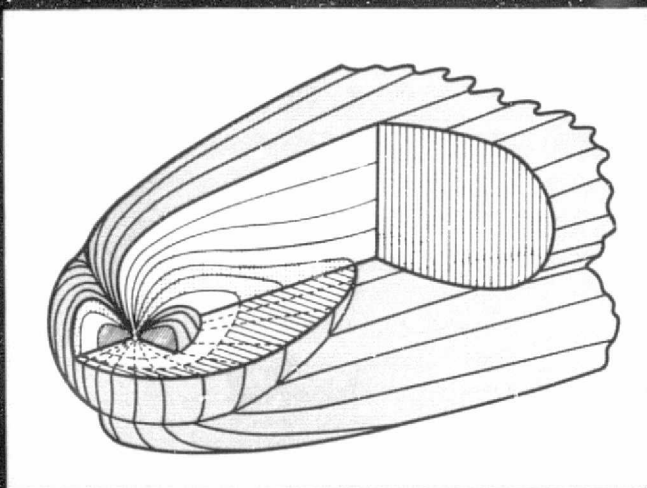
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IMS/Satellite Situation Center Report

Daily Summary for

IMS High-Altitude Satellites, Days 1-181 1977



REPORT NO. 7

OCTOBER 1976

NSSDC/WDC-A-R&S

IMS/Satellite Situation Center Report

Daily Summary for
IMS High-Altitude Satellites, Days 1-181 1977

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National Space Science Data Center/
World Data Center A for Rockets and Satellites
National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

The Satellite Situation Center (SSC) and the Temporary IMS Central Information Exchange (TIMSCIE) Office support the activities of the IMS. In order that their services may be recognized by the agencies funding the IMS in the various countries and by the scientists participating in the IMS program, it would be appreciated if the data presented in this and other SSC publications were acknowledged in those papers where it has been used or proved useful in carrying out the IMS scientific programs.

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I. INTRODUCTION

The purpose of this report is to provide a concise and easily used description of the orbital positions of a number of high-altitude satellites capable of making magnetospheric measurements in the first half of 1977 as part of the International Magnetospheric Study (IMS). Six artificial satellites -- Vela 5B, IMP-H, IMP-J, Solrad 11A, Solrad 11B, and Hawkeye 1 -- have been chosen along with the Moon. Using this report, the principal investigators of the various operable experiments on these satellites and other IMS scientists hopefully can more easily define meaningful programs within the IMS framework to be performed. The Moon has been included because the Apollo lunar surface experiments package (ALSEP) suprathermal ion detector experiments (SIDES) are still operating and can determine plasma parameters as well as identify boundaries. Although present plans are to cease data acquisition of Hawkeye 1 at the end of 1976, it has been included to determine when such data could be extremely valuable. The data coverage for the Vela satellites is expected to be quite small in 1977; for that reason, we have included only Vela 5B in this report.

Only the first half of 1977 is presented here. There are two practical reasons why the whole year is not covered. Firstly, the Solrad satellites are to be maintained close to 180° apart by firing a thruster whenever their angular separation differs from 180° by more than approximately $3/4^\circ$. This implies that the orbit of one or both of these satellites will be changed slightly during 1976 and 1977. A 6-month prediction will be more accurate for this pair of satellites than will a 1-year prediction. This is also true for all the other artificial satellites although none of them have active thrusters. Secondly, to conform to the adopted IMS time standard of 1 cm/h, the satellite bar chart we have developed as the basic Satellite Situation Center (SSC) hardcopy product requires two pages to show the positions of the seven satellites for each day. To bind a document of over 400 pages into a single volume is difficult. Consequently, both accuracy of prediction and practicality of publication dictate a document which covers no more than 6 months.

Besides the daily position summary of the satellites, which will be described in detail in Section IV, tables which provide the crossing times of the bow shock and magnetopause, as well as the entry and exit times from the cusp, the high-latitude tail, the midlatitude tail, and the neutral sheet region, are given for each satellite. The supporting types of plots which are available on 35-mm film are also discussed. Based on the study of all available plots, the SSC has identified nine time periods which seem to present unusual opportunities to obtain good coverage of magnetospheric phenomena. However, the primary selection of Special Periods for 1977 will be accomplished by the scientists participating in the IMS, as described in Section II.

II. SELECTION OF SPECIAL OBSERVING PERIODS FOR 1977

The procedures for defining a program of magnetospheric observations in 1977 for the IMS will differ from that used in 1976. Last year, the IMS Steering Committee met at the SSC in early December and considered the predicted positions of six high-altitude satellites (Hawkeye 1, Vela 5B, 6A, and 6B, and IMP-H and -J along with information on synchronous and low-altitude spacecraft. This material, supplied by the SSC, was combined with listings of ground-based rocket and aircraft (GBR) programs as obtained from the IMS Directory No. 2, which were updated by personal knowledge of members of the Steering Committee. On the basis of these deliberations, 18 periods were chosen as Special IMS Periods for 1976. These were announced by the Steering Committee through a four-page letter in late December 1975, and the details were provided in IMS/Satellite Situation Center Report No. 6: Special IMS Periods for 1976.

For 1977, a more coordinated determination of important periods will be accomplished. Suggestions for Special Periods will be solicited by the IMS Steering Committee from the experimenters of satellites, particularly the high-altitude ones given here; and some important intervals based principally on GBR campaigns will also be identified. In addition, the nine periods identified by the SSC in this report will be considered. Two factors make this approach possible. Firstly, the Temporary IMS Central Information Exchange (TIMSCIE) Office located at World Data Center A for Solar Terrestrial Physics at Boulder, Colorado, has been producing a monthly IMS Newsletter throughout 1976 which gives detailed information available on GBR and satellite programs. This information has been gathered and verified by TIMSCIE personnel, using direct, telephone, and TELEX contact with the numerous IMS experimenters; and it represents the most up-to-date status of the various projects. Secondly, the SSC is now able to provide to the high-altitude experimenters predicted positions of such spacecraft in time for the various experimenters to reflect on the confluence of these satellites and to work up Special Periods based on scientific interests and previously approved data acquisition. Special coordination for such intervals can be achieved using the IMS Newsletter and other more rapid forms of communication between principals.

III. TABULAR INFORMATION FOR HIGH-ALTITUDE SATELLITES

The times at which the spacecraft cross magnetospheric boundaries or traverse certain regions provide a most concise description of orbital positions. Magnetopause crossing times are arranged chronologically in Table 1 and identified by satellite. From this display, it is easy to determine the near coincidence of multiple spacecraft crossing this boundary. For example, within the 5-hour period beginning at Day 3, Hour 13.70, Hawkeye 1, IMP-H, Vela 5B, and the Moon, all cross the magnetopause. Similar information for bow shock crossings is given in Table 2. The entry and exit times of satellites from the three regions of the magnetotail -- neutral sheet, midlatitude tail, and high-latitude tail -- are given in

Tables 3, 4, and 5, respectively. These are ordered by entry time into each region.

Hawkeye 1 is the only satellite considered which traverses the cusp or cleft region of the magnetosphere. The entry and exit times for all such cusp passes exceeding 0.3 hour in length are given in Table 6. Because of the nature of the orbit, all these passes traverse the Northern Hemisphere cusp.

The Special Periods recommended by the SSC are presented in Table 7. Although the approximate time corresponding to the region in which each satellite is marked is useful, a more detailed picture can be obtained by referring to the daily bar charts in the Appendix. Six hours should be subtracted from the first time shown, and 6 hours should be added to the last time shown for each period in Table 7 to allow for boundary movements and other factors during data acquisition.

The definition of the regions of space used by the SSC and the symbols denoting them are the same as used in IMS/SSC Report No. 6, but they are given again as Table 8 for completeness.

IV. STANDARD PLOTS FROM THE SSC

The types of plots which the SSC has found most useful have been evolving over the past few years. Since plots for all the high-altitude satellites presented in this report are available on 35-mm film in the SSC standard plots for the first half of 1977, it is useful to display an example of each plot. The Geocentric Solar Ecliptic (GSE) X-Y projection plot shown in Figure 1 has been used for some time by the SSC. However, the means of projection onto the X-Y plane has changed from previous reports, and the positional vector of the satellite is now rotated about the X-axis. This type of rotation is responsible for flattening the orbits of IMP-H and IMP-J in Figure 1. However, this rotation tends to show the position fairly accurately with respect to the bow shock or magnetopause.

However, to show the distance of the satellite from these boundaries, the boundary plot shown in Figure 2 was developed and first presented in IMS/SSC Report No. 6. The distance of the satellite from both the bow shock (marked with an S) and the magnetopause (marked with a P) can be determined for any time. Positive distances are on the concave side of the surfaces. The ecliptic longitude and latitude for these same satellites are given in Figure 3, which is referred to as the longitude/latitude plot. The neutral sheet plot given in Figure 4 shows the distance from the nominal neutral sheet as a function of time. Only the Northern Hemisphere midlatitude tail and high-latitude tail regions are labeled in this plot. The Geocentric Solar Magnetospheric (GSM) X-Y plots for these satellites shown in Figure 5 give the additional coordinates necessary for a three-dimensional picture.

In order to show the position of a high-inclination satellite such as Hawkeye 1, the SSC has employed the Solar Magnetic Coordinate System and produced plots in the magnetic latitude/magnetic local time plane. An example is shown in Figure 6 where time ticks are used to give specific positions.

It should be noted that the sample plots shown in Figures 1 through 6 depict the SSC Special Period No. 3 shown in Table 7. It should be remarked that in all the plots similar to Figures 1 and 6, the time labeling of the boundary crossings is not as accurate as in the tables of Section III where interpolated values are calculated.

The frequency of the above plots and the grouping of satellites on each type of plot for the first half of 1977 are presented in Table 9. These plots are available only on 35-mm film; and for the boundary, longitude/latitude, neutral sheet, and X-Y plots, the time axis on the film is .056 cm/h, which will yield the IMS standard of 1 cm/h when blown back with an 18.25 X magnification lens. The Nonsatellite Data File (NSDF) numbers shown in Table 9 should be quoted by those requesting the microfilm.

Although the previous types of plots are useful in showing positions relative to magnetospheric regions, the limit is about three satellites per plot; and different plots are required in different regions. To present the crude three-dimensional position of all the high-altitude satellites in a single format regardless of the magnetospheric region, the bar charts which comprise the Appendix were developed by the SSC. This is the most concise presentation and allows for all satellites to appear on the same page. In this report each bar chart is 24 hours in length, and this time scale is the IMS standard, 24 cm in length. A three-letter mnemonic is used to represent the various regions of space:

- INP - Interplanetary Medium (I in Table 8)
- SHE - Magnetosheath (DS and NS in Table 8)
- SPH - Magnetosphere (DM and NM in Table 8)
- TAL - Magnetotail (HT, MT, and Sh in Table 8)

The subregions are given by providing the solar ecliptic local time on the bottom line of a satellite box while the second line gives the solar ecliptic latitude. There is one exception; for Hawkeye 1 the magnetic local time and geomagnetic latitude are employed. For both the interplanetary and magnetotail regions, the distance of the satellite from the bow shock and neutral sheet, respectively, is given in Earth radii; the notation \bar{r} denotes a negative distance.

A vertical line is drawn in each satellite box when the satellite crosses from one region to the next. The boundary crossings S (bow shock) and P (magnetopause) appear at the crossing time above the satellite box. Thus, on Day 126, the P above the Vela 5B box denotes the magnetopause crossing of 5.66 h as found in Table 1. The only other letters that appear

about the boxes are to denote entry ζ to and exit ζ from the cusp. An example of this can be seen in the plot for Day 5. If the interval within the cusp is less than 1 hour, only the letter C will appear above the box as shown on Day 3.

Table 1. Magnetopause Crossings, Days 1-181 1977

| Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) |
|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|
| IMP-H | 1/0.94 | Solrad 11B | 20/18.90 | Solrad 11A | 40/19.50 | Hawkeye 1 | 61/6.70 | Solrad 11A | 80/3.91 | Solrad 11A | 100/19.88 |
| Hawkeye 1 | 1/10.46 | Hawkeye 1 | 21/23.74 | Vela 5B | 41/5.37 | Solrad 11A | 61/11.83 | Hawkeye 1 | 80/13.14 | Hawkeye 1 | 101/4.39 |
| Solrad 11B | 2/2.34 | IMP-J | 22/3.45 | Hawkeye 1 | 41/6.21 | Vela 5B | 61/19.49 | Vela 5B | 80/14.47 | IMP-H | 101/21.80 |
| Solrad 11A | 2/14.68 | Vela 5B | 22/10.86 | Solrad 11B | 41/11.34 | Solrad 11B | 62/3.98 | Hawkeye 1 | 81/22.29 | Hawkeye 1 | 101/23.48 |
| Hawkeye 1 | 2/17.34 | Solrad 11B | 22/18.89 | IMP-H | 41/17.98 | IMP-J | 62/13.31 | Solrad 11A | 82/4.02 | Vela 5B | 102/13.52 |
| Hawkeye 1 | 3/13.70 | Hawkeye 1 | 22/19.05 | Hawkeye 1 | 42/0.71 | Hawkeye 1 | 62/16.01 | Hawkeye 1 | 82/16.55 | Solrad 11A | 102/20.17 |
| IMP-H | 3/15.40 | Solrad 11A | 23/7.11 | Vela 5B | 43/1.54 | Moon | 63/2.44 | Solrad 11B | 82/20.45 | Hawkeye 1 | 103/7.72 |
| Vela 5B | 3/16.65 | Hawkeye 1 | 24/3.12 | Hawkeye 1 | 43/9.59 | Hawkeye 1 | 63/10.06 | Vela 5B | 83/14.82 | Solrad 11B | 103/12.74 |
| Moon | 3/18.70 | Vela 5B | 24/7.80 | Solrad 11B | 43/11.49 | Solrad 11B | 64/4.08 | Hawkeye 1 | 84/1.64 | IMP-H | 104/2.46 |
| Solrad 11A | 4/14.93 | IMP-J | 24/21.09 | Solrad 11A | 43/23.39 | IMP-H | 64/11.82 | Hawkeye 1 | 84/19.96 | Hawkeye 1 | 104/2.94 |
| Hawkeye 1 | 4/20.72 | Hawkeye 1 | 24/22.32 | Hawkeye 1 | 44/4.02 | Solrad 11A | 64/15.72 | Solrad 11B | 84/20.67 | Vela 5B | 104/4.93 |
| Solrad 11B | 5/6.35 | Solrad 11A | 25/7.29 | Hawkeye 1 | 45/12.96 | Vela 5B | 64/17.78 | Vela 5B | 85/7.40 | Hawkeye 1 | 105/11.05 |
| Vela 5B | 5/13.85 | Solrad 11B | 25/23.00 | Vela 5B | 45/22.11 | Hawkeye 1 | 64/19.39 | Solrad 11A | 85/7.88 | Solrad 11B | 105/13.06 |
| Hawkeye 1 | 5/16.95 | Hawkeye 1 | 26/6.50 | Solrad 11A | 45/23.53 | Hawkeye 1 | 65/13.44 | IMP-J | 85/21.61 | Solrad 11A | 105/23.98 |
| Hawkeye 1 | 7/0.10 | IMP-H | 26/16.54 | Hawkeye 1 | 46/7.33 | Moon | 66/8.23 | Hawkeye 1 | 86/5.09 | Hawkeye 1 | 106/6.41 |
| Moon | 7/5.08 | Hawkeye 1 | 27/1.60 | Solrad 11B | 46/15.61 | IMP-H | 66/11.58 | IMP-J | 86/18.23 | Vela 5B | 107/7.28 |
| Solrad 11B | 7/6.42 | Vela 5B | 27/3.40 | IMP-J | 47/6.02 | Vela 5B | 66/12.13 | Hawkeye 1 | 86/23.39 | Hawkeye 1 | 107/14.37 |
| Solrad 11A | 7/18.74 | Solrad 11B | 27/23.10 | Hawkeye 1 | 47/16.35 | Solrad 11A | 66/15.83 | Solrad 11A | 87/8.12 | Solrad 11A | 108/0.16 |
| Hawkeye 1 | 7/20.20 | Hawkeye 1 | 28/9.88 | Vela 5B | 47/17.94 | Hawkeye 1 | 66/22.77 | Solrad 11B | 88/0.50 | Hawkeye 1 | 108/9.88 |
| Vela 5B | 8/9.22 | Solrad 11A | 28/11.16 | Hawkeye 1 | 48/10.65 | Solrad 11B | 67/8.04 | Vela 5B | 88/8.35 | Solrad 11B | 108/16.87 |
| Hawkeye 1 | 9/3.49 | Vela 5B | 29/0.18 | Solrad 11B | 48/15.59 | Hawkeye 1 | 67/16.81 | Hawkeye 1 | 88/8.36 | Vela 5B | 108/22.71 |
| IMP-J | 9/14.80 | IMP-H | 29/2.86 | Solrad 11A | 49/3.57 | Hawkeye 1 | 69/2.13 | Hawkeye 1 | 89/2.82 | Hawkeye 1 | 109/17.70 |
| Solrad 11A | 9/18.99 | Hawkeye 1 | 29/4.88 | Hawkeye 1 | 49/19.73 | Solrad 11B | 69/8.24 | IMP-H | 89/4.92 | Hawkeye 1 | 110/13.36 |
| Hawkeye 1 | 9/23.46 | Solrad 11A | 30/11.38 | IMP-J | 50/0.30 | Vela 5B | 69/10.86 | Solrad 11B | 90/0.90 | Solrad 11B | 110/17.20 |
| Vela 5B | 10/6.38 | Hawkeye 1 | 30/13.26 | Hawkeye 1 | 50/13.98 | Solrad 11A | 69/19.68 | Vela 5B | 90/7.70 | Solrad 11A | 111/3.99 |
| Solrad 11B | 10/10.44 | Solrad 11B | 31/3.14 | Vela 5B | 50/14.95 | Hawkeye 1 | 69/20.19 | Hawkeye 1 | 90/11.72 | Hawkeye 1 | 111/21.02 |
| Hawkeye 1 | 11/6.87 | Hawkeye 1 | 31/8.18 | Solrad 11A | 51/3.62 | Vela 5B | 71/4.84 | Solrad 11A | 90/11.90 | Vela 5B | 112/0.97 |
| Hawkeye 1 | 12/2.72 | Vela 5B | 31/20.04 | Solrad 11B | 51/19.76 | Hawkeye 1 | 71/5.49 | Hawkeye 1 | 91/6.12 | Hawkeye 1 | 112/16.84 |
| IMP-J | 12/3.25 | Hawkeye 1 | 32/16.66 | Hawkeye 1 | 51/23.11 | Solrad 11A | 71/19.92 | IMP-H | 91/7.01 | Solrad 11A | 113/4.24 |
| Solrad 11B | 12/10.60 | Solrad 11B | 33/3.21 | IMP-H | 52/2.48 | Hawkeye 1 | 71/23.57 | Solrad 11A | 92/12.14 | Vela 5B | 113/16.61 |
| Solrad 11A | 12/22.78 | Hawkeye 1 | 33/11.47 | Vela 5B | 52/10.47 | Solrad 11B | 72/12.17 | Moon | 92/13.73 | Solrad 11B | 113/20.90 |
| Vela 5B | 13/1.73 | Moon | 33/12.24 | Hawkeye 1 | 52/17.31 | IMP-J | 72/17.39 | Hawkeye 1 | 92/15.05 | Hawkeye 1 | 114/0.34 |
| Hawkeye 1 | 13/10.24 | Solrad 11A | 33/15.26 | Solrad 11B | 53/19.81 | Hawkeye 1 | 73/8.86 | Vela 5B | 93/2.04 | IMP-H | 114/18.82 |
| IMP-H | 13/19.46 | Vela 5B | 33/16.61 | Hawkeye 1 | 54/2.48 | Hawkeye 1 | 74/2.95 | Solrad 11B | 93/4.62 | Hawkeye 1 | 114/20.32 |
| Hawkeye 1 | 14/5.98 | IMP-J | 34/16.09 | IMP-H | 54/4.21 | Vela 5B | 74/4.10 | Hawkeye 1 | 93/9.67 | Solrad 11B | 115/21.36 |
| Vela 5B | 14/22.91 | Hawkeye 1 | 34/20.05 | Solrad 11A | 54/7.60 | Solrad 11B | 74/12.34 | Vela 5B | 94/17.83 | Hawkeye 1 | 116/3.66 |
| Solrad 11A | 14/23.07 | Hawkeye 1 | 35/14.77 | Hawkeye 1 | 54/20.65 | IMP-J | 74/20.34 | Hawkeye 1 | 94/18.39 | Solrad 11A | 116/7.92 |
| Hawkeye 1 | 15/13.61 | Solrad 11A | 35/15.40 | Vela 5B | 55/7.76 | Solrad 11A | 74/23.82 | Solrad 11B | 95/4.86 | Vela 5B | 116/18.62 |
| Solrad 11B | 15/14.65 | Solrad 11B | 36/7.27 | Hawkeye 1 | 56/5.86 | Hawkeye 1 | 75/12.22 | Hawkeye 1 | 95/13.12 | Hawkeye 1 | 116/23.81 |
| IMP-H | 16/8.57 | Vela 5B | 36/12.72 | Solrad 11A | 56/7.77 | Vela 5B | 75/21.58 | Solrad 11A | 95/15.91 | IMP-H | 117/2.61 |
| Hawkeye 1 | 16/9.24 | Moon | 36/20.16 | Solrad 11B | 56/23.84 | Hawkeye 1 | 76/6.34 | Moon | 95/18.80 | Hawkeye 1 | 118/6.99 |
| Solrad 11B | 17/14.67 | Hawkeye 1 | 36/23.45 | Hawkeye 1 | 56/23.99 | IMP-H | 76/19.24 | Hawkeye 1 | 96/21.73 | Solrad 11A | 118/8.30 |
| Hawkeye 1 | 17/16.98 | IMP-J | 37/10.74 | Vela 5B | 57/2.93 | Solrad 11A | 76/23.92 | Solrad 11A | 97/16.15 | Vela 5B | 118/10.67 |
| Vela 5B | 17/18.24 | Hawkeye 1 | 37/18.08 | Hawkeye 1 | 58/9.24 | Hawkeye 1 | 77/15.58 | Hawkeye 1 | 97/16.57 | Solrad 11B | 119/0.93 |
| Solrad 11A | 18/3.04 | Solrad 11B | 38/7.33 | Solrad 11B | 59/0.00 | Solrad 11B | 77/16.37 | Vela 5B | 97/19.73 | Hawkeye 1 | 119/3.31 |
| Hawkeye 1 | 18/12.50 | Vela 5B | 38/9.06 | Hawkeye 1 | 59/3.34 | Hawkeye 1 | 78/9.74 | Solrad 11B | 98/8.60 | Hawkeye 1 | 120/10.31 |
| Vela 5B | 19/15.29 | Solrad 11A | 38/19.28 | Solrad 11A | 59/11.64 | IMP-H | 78/19.15 | Hawkeye 1 | 99/1.05 | Solrad 11B | 121/1.46 |
| Hawkeye 1 | 19/20.36 | Hawkeye 1 | 39/2.84 | IMP-J | 59/23.38 | Vela 5B | 78/21.44 | Vela 5B | 99/11.32 | Hawkeye 1 | 121/6.81 |
| Solrad 11A | 20/3.11 | IMP-H | 39/11.76 | Vela 5B | 60/0.80 | Solrad 11B | 79/16.47 | Hawkeye 1 | 99/20.02 | Solrad 11A | 121/11.94 |
| Hawkeye 1 | 20/15.77 | Hawkeye 1 | 39/21.39 | Hawkeye 1 | 60/12.62 | Hawkeye 1 | 79/18.94 | Solrad 11B | 100/9.02 | Vela 5B | 121/12.18 |

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Table 1. Magnetopause Crossings, Days 1-181 1977 (concluded)

| Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) | Satellite | Time (Day/h) |
|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|------------|--------------|
| Moon | 121/21.98 | Hawkeye 1 | 132/0.32 | Hawkeye 1 | 142/17.86 | IMP-H | 152/11.98 | Hawkeye 1 | 163/3.84 | Vela 5B | 173/5.84 |
| Hawkeye 1 | 122/13.62 | Vela 5B | 132/16.87 | Hawkeye 1 | 143/22.51 | Hawkeye 1 | 153/11.39 | Vela 5B | 163/20.75 | Hawkeye 1 | 173/20.04 |
| Vela 5B | 123/4.74 | Hawkeye 1 | 133/6.08 | Solrad 11A | 144/4.29 | Moon | 154/9.36 | Hawkeye 1 | 164/4.81 | Hawkeye 1 | 174/22.11 |
| Hawkeye 1 | 123/10.32 | Solrad 11A | 133/20.24 | Solrad 11B | 144/21.21 | Vela 5B | 154/11.55 | IMP-J | 164/12.02 | IMP-J | 174/22.34 |
| Solrad 11A | 123/12.07 | Hawkeye 1 | 134/3.83 | Hawkeye 1 | 144/21.36 | Solrad 11A | 154/12.22 | IMP-H | 164/18.80 | Solrad 11A | 175/4.24 |
| Solrad 11B | 124/5.01 | Solrad 11B | 134/13.13 | Vela 5B | 145/1.98 | Hawkeye 1 | 154/14.85 | Solrad 11A | 164/20.18 | Vela 5B | 175/5.66 |
| Hawkeye 1 | 124/16.91 | Hawkeye 1 | 135/9.37 | Hawkeye 1 | 146/1.80 | IMP-H | 154/20.45 | Hawkeye 1 | 165/7.09 | Solrad 11B | 175/21.48 |
| Moon | 125/2.59 | Vela 5B | 135/16.05 | Solrad 11B | 146/21.88 | Solrad 11B | 155/5.25 | Solrad 11B | 165/13.44 | Hawkeye 1 | 175/23.27 |
| Hawkeye 1 | 125/13.82 | Hawkeye 1 | 136/7.34 | Vela 5B | 146/22.26 | Hawkeye 1 | 155/14.88 | Vela 5B | 165/19.59 | Hawkeye 1 | 177/1.56 |
| Solrad 11B | 126/5.49 | Solrad 11B | 136/13.62 | Hawkeye 1 | 147/0.86 | Vela 5B | 156/9.15 | Hawkeye 1 | 166/8.28 | IMP-H | 177/2.16 |
| Vela 5B | 126/5.66 | Solrad 11A | 136/23.90 | Solrad 11A | 147/7.77 | Hawkeye 1 | 156/18.10 | IMP-H | 167/4.02 | IMP-J | 177/6.57 |
| Solrad 11A | 126/15.84 | Vela 5B | 137/10.76 | Hawkeye 1 | 148/5.08 | Solrad 11B | 157/6.00 | Hawkeye 1 | 167/10.32 | Vela 5B | 177/22.32 |
| Hawkeye 1 | 126/20.21 | Hawkeye 1 | 137/12.66 | Hawkeye 1 | 149/4.37 | Solrad 11A | 157/15.66 | Solrad 11B | 167/14.08 | Solrad 11B | 177/22.34 |
| IMP-H | 127/12.70 | Hawkeye 1 | 138/10.84 | Solrad 11A | 149/8.32 | Hawkeye 1 | 157/18.36 | Solrad 11A | 167/23.73 | Hawkeye 1 | 178/2.48 |
| Hawkeye 1 | 127/17.32 | Solrad 11A | 139/0.23 | Vela 5B | 149/18.78 | Hawkeye 1 | 158/21.35 | Hawkeye 1 | 168/11.75 | Solrad 11A | 178/7.62 |
| Vela 5B | 127/22.87 | Hawkeye 1 | 139/15.94 | IMP-J | 149/22.64 | Vela 5B | 159/4.20 | Vela 5B | 168/13.33 | Hawkeye 1 | 179/5.00 |
| Solrad 11A | 128/16.29 | Solrad 11B | 139/17.21 | Solrad 11B | 150/1.27 | Solrad 11A | 159/16.24 | Hawkeye 1 | 169/13.56 | IMP-H | 179/12.52 |
| Hawkeye 1 | 128/23.50 | IMP-H | 140/2.59 | Hawkeye 1 | 150/8.34 | Hawkeye 1 | 159/21.85 | Solrad 11A | 170/0.18 | Vela 5B | 179/22.52 |
| Solrad 11B | 129/9.00 | Vela 5B | 140/9.08 | Moon | 151/6.80 | Solrad 11B | 160/9.31 | Vela 5B | 170/12.67 | Hawkeye 1 | 180/5.70 |
| Hawkeye 1 | 129/20.82 | Hawkeye 1 | 140/14.35 | Hawkeye 1 | 151/7.88 | Hawkeye 1 | 161/0.60 | Hawkeye 1 | 170/15.21 | Solrad 11A | 180/8.23 |
| IMP-H | 129/22.11 | Solrad 11B | 141/17.75 | IMP-J | 151/9.75 | Vela 5B | 161/2.45 | Solrad 11B | 170/17.49 | Moon | 180/13.93 |
| Vela 5B | 130/22.95 | Hawkeye 1 | 141/19.23 | Vela 5B | 151/15.74 | Hawkeye 1 | 162/1.33 | Hawkeye 1 | 171/16.80 | Solrad 11B | 181/1.59 |
| Hawkeye 1 | 131/2.79 | Solrad 11A | 142/3.85 | Solrad 11B | 152/1.91 | Solrad 11B | 162/10.04 | Solrad 11B | 172/18.20 | Hawkeye 1 | 181/8.44 |
| Solrad 11B | 131/9.59 | Vela 5B | 142/4.56 | Hawkeye 1 | 152/11.60 | IMP-J | 162/10.40 | Hawkeye 1 | 172/18.26 | | |
| Solrad 11A | 131/19.84 | IMP-H | 142/11.76 | Solrad 11A | 152/11.79 | Solrad 11A | 162/19.70 | Solrad 11A | 173/3.66 | | |

Table 2. Sun Spot Crossings, Days 1-181 1977

| Satellite | Time (Day/Sec) | Satellite | Time (Day/Sec) | Satellite | Time (Day/Sec) | Satellite | Time (Day/Sec) | Satellite | Time (Day/Sec) | Satellite | Time (Day/Sec) |
|------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|------------|----------------|
| Vela 5B | 1/8.32 | IMP-J | 35/7.15 | IMP-J | 67/11.11 | IMP-J | 95/10.61 | IMP-J | 127/12.67 | Solrad 11B | 159/19.06 |
| Solrad 11A | 1/23.55 | Solrad 11B | 35/11.70 | Solrad 11B | 67/15.03 | Vela 5B | 95/23.05 | Vela 5B | 129/17.64 | Solrad 11A | 160/5.81 |
| Solrad 11B | 2/15.70 | Vela 5B | 34/15.51 | Solrad 11B | 68/16.70 | Solrad 11B | 97/17.40 | Solrad 11B | 129/17.65 | IMP-J | 160/7.41 |
| Vela 5B | 3/1.37 | Solrad 11B | 35/16.00 | Vela 5B | 67/16.81 | Moon | 97/16.00 | Solrad 11A | 129/16.00 | Vela 5B | 161/17.85 |
| IMP-H | 4/14.53 | Vela 5B | 35/22.06 | Solrad 11A | 67/16.52 | Solrad 11A | 96/15.63 | Vela 5B | 130/16.85 | Solrad 11A | 162/4.51 |
| Solrad 11B | 4/15.02 | Solrad 11A | 36/2.88 | IMP-H | 67/16.55 | Vela 5B | 100/4.55 | IMP-H | 130/16.85 | Solrad 11B | 162/21.20 |
| Solrad 11A | 5/2.40 | IMP-H | 37/20.45 | Moon | 68/16.00 | Solrad 11A | 100/4.70 | Solrad 11A | 131/4.71 | Vela 5B | 163/1.61 |
| Vela 5B | 6/1.20 | Solrad 11A | 38/5.04 | Vela 5B | 68/16.46 | IMP-H | 100/15.45 | Solrad 11B | 131/21.20 | IMP-H | 163/15.67 |
| Solrad 11A | 7/5.37 | IMP-J | 38/17.70 | Solrad 11A | 69/4.42 | Solrad 11B | 100/20.56 | Vela 5B | 133/11.51 | Solrad 11B | 164/22.14 |
| Solrad 11B | 7/17.83 | Solrad 11B | 38/18.78 | Solrad 11B | 69/19.74 | Vela 5B | 101/16.26 | Solrad 11A | 133/21.67 | Solrad 11A | 165/7.77 |
| Vela 5B | 7/18.42 | Vela 5B | 38/20.03 | IMP-J | 70/16.75 | IMP-J | 101/21.66 | Solrad 11A | 134/7.79 | IMP-J | 165/11.95 |
| IMP-J | 8/4.20 | Moon | 39/6.37 | Vela 5B | 71/18.09 | Solrad 11B | 102/21.61 | IMP-J | 134/14.66 | Vela 5B | 166/10.62 |
| Moon | 9/12.53 | Vela 5B | 40/15.19 | Solrad 11B | 71/21.03 | Solrad 11A | 103/7.70 | Vela 5B | 134/19.68 | Solrad 11A | 167/8.36 |
| Solrad 11B | 9/19.10 | Solrad 11B | 40/20.15 | Solrad 11A | 72/7.43 | Vela 5B | 104/22.82 | Solrad 11A | 136/8.72 | Vela 5B | 167/21.69 |
| Solrad 11A | 10/6.42 | Solrad 11A | 41/6.94 | Vela 5B | 73/11.12 | IMP-H | 105/1.82 | Solrad 11B | 137/1.23 | Solrad 11B | 168/1.72 |
| Vela 5B | 10/17.50 | IMP-H | 42/15.61 | Solrad 11A | 74/8.62 | Solrad 11A | 105/8.81 | Vela 5B | 136/4.60 | IMP-H | 168/2.52 |
| IMP-H | 12/6.27 | Solrad 11A | 43/8.15 | Solrad 11B | 74/23.90 | Solrad 11B | 106/0.06 | IMP-H | 136/22.50 | Solrad 11B | 170/2.12 |
| Solrad 11A | 12/7.50 | Vela 5B | 43/12.60 | IMP-H | 75/13.63 | Vela 5B | 106/0.50 | Solrad 11B | 139/1.97 | Solrad 11A | 170/11.74 |
| Vela 5B | 12/11.25 | Solrad 11B | 43/22.96 | Vela 5B | 76/11.39 | Solrad 11B | 108/1.68 | Solrad 11A | 139/11.76 | Vela 5B | 171/5.33 |
| Solrad 11B | 12/21.99 | Vela 5B | 45/7.74 | IMP-J | 76/19.27 | Solrad 11A | 108/11.67 | Vela 5B | 139/17.30 | Solrad 11A | 172/12.56 |
| IMP-J | 13/12.01 | IMP-J | 45/21.21 | Solrad 11B | 77/1.19 | IMP-J | 108/14.95 | IMP-J | 139/20.46 | Vela 5B | 172/14.65 |
| Solrad 11B | 14/23.49 | Solrad 11B | 46/0.44 | Solrad 11A | 77/11.45 | Vela 5B | 109/17.11 | Solrad 11A | 141/12.62 | IMP-J | 173/5.04 |
| Vela 5B | 15/9.89 | Solrad 11A | 46/11.02 | Vela 5B | 78/5.77 | Solrad 11A | 110/12.77 | Solrad 11B | 142/5.32 | Solrad 11B | 173/5.61 |
| Solrad 11A | 15/10.55 | Vela 5B | 46/5.31 | Solrad 11A | 79/12.64 | Vela 5B | 111/2.85 | Vela 5B | 142/22.08 | Solrad 11B | 175/0.14 |
| Vela 5B | 17/4.00 | Solrad 11A | 48/12.27 | IMP-H | 79/15.27 | Solrad 11B | 111/4.75 | IMP-H | 143/8.12 | Solrad 11A | 175/15.81 |
| IMP-H | 17/7.95 | Solrad 11B | 49/5.07 | Solrad 11B | 80/5.95 | Solrad 11B | 115/5.08 | Solrad 11B | 144/5.96 | Vela 5B | 175/19.98 |
| Solrad 11A | 17/11.74 | Vela 5B | 50/0.29 | Vela 5B | 81/4.85 | IMP-H | 115/10.87 | Vela 5B | 144/7.00 | IMP-H | 176/0.68 |
| Solrad 11B | 18/2.11 | IMP-H | 50/15.64 | Solrad 11B | 82/5.23 | Solrad 11A | 115/15.72 | Solrad 11A | 144/15.80 | Vela 5B | 177/7.35 |
| Vela 5B | 20/2.18 | Solrad 11B | 51/4.51 | Solrad 11A | 82/15.40 | Vela 5B | 114/11.42 | Solrad 11A | 146/16.59 | Solrad 11A | 177/16.36 |
| Solrad 11B | 20/3.64 | IMP-J | 51/10.26 | Vela 5B | 82/20.43 | IMP-J | 114/12.09 | Solrad 11B | 147/9.48 | IMP-J | 177/19.55 |
| Solrad 11A | 20/14.54 | Solrad 11A | 51/15.06 | IMP-J | 83/5.66 | Solrad 11A | 115/16.75 | IMP-J | 147/11.75 | IMP-J | 178/5.09 |
| IMP-J | 20/17.90 | Vela 5B | 52/22.06 | Solrad 11A | 84/16.63 | Vela 5B | 115/20.43 | Vela 5B | 147/15.23 | Solrad 11B | 178/10.00 |
| Vela 5B | 21/20.73 | Solrad 11A | 53/16.20 | Solrad 11B | 85/8.18 | Solrad 11B | 116/8.91 | Moon | 148/12.54 | Solrad 11B | 180/10.16 |
| Solrad 11A | 22/15.76 | Solrad 11B | 54/7.28 | Vela 5B | 85/22.47 | IMP-H | 118/1.72 | Vela 5B | 149/0.70 | Vela 5B | 180/12.57 |
| Solrad 11B | 23/6.29 | Vela 5B | 54/16.81 | Solrad 11B | 87/9.32 | Solrad 11B | 118/9.77 | Solrad 11B | 149/10.04 | IMP-H | 180/13.82 |
| Vela 5B | 24/18.63 | IMP-H | 54/23.51 | Vela 5B | 87/13.25 | Solrad 11A | 118/19.82 | Solrad 11A | 149/19.69 | Solrad 11A | 181/11.88 |
| IMP-H | 25/0.68 | Solrad 11B | 56/8.63 | Solrad 11A | 87/19.62 | Moon | 119/5.37 | IMP-H | 151/9.87 | | |
| Solrad 11B | 25/7.76 | Solrad 11A | 56/19.23 | IMP-H | 87/23.53 | Vela 5B | 119/5.71 | Solrad 11A | 151/20.52 | | |
| Solrad 11A | 25/18.71 | Vela 5B | 57/14.85 | IMP-J | 89/6.09 | Vela 5B | 120/14.19 | Vela 5B | 152/8.16 | | |
| IMP-J | 26/3.57 | IMP-J | 58/11.29 | Moon | 89/15.24 | Solrad 11A | 120/20.75 | Solrad 11B | 152/13.59 | | |
| Vela 5B | 26/13.39 | Solrad 11A | 58/20.37 | Solrad 11A | 89/20.68 | Solrad 11B | 121/13.07 | IMP-J | 152/20.10 | | |
| Solrad 11A | 27/19.86 | Vela 5B | 59/9.39 | Solrad 11B | 90/12.30 | IMP-J | 121/13.71 | Vela 5B | 153/18.12 | | |
| Solrad 11B | 28/10.54 | Solrad 11B | 59/11.51 | Vela 5B | 90/16.35 | Solrad 11B | 123/13.74 | Solrad 11B | 154/13.93 | | |
| Vela 5B | 29/11.00 | Moon | 59/23.69 | IMP-H | 92/5.30 | Vela 5B | 123/23.74 | Solrad 11A | 154/23.78 | | |
| IMP-H | 30/1.89 | Solrad 11B | 61/12.76 | Vela 5B | 92/6.20 | Solrad 11A | 123/23.82 | IMP-H | 155/16.96 | | |
| Moon | 30/4.55 | Solrad 11A | 61/23.34 | Solrad 11B | 92/13.40 | Vela 5B | 125/7.91 | Moon | 156/8.66 | | |
| Solrad 11B | 30/11.92 | Vela 5B | 62/7.81 | Solrad 11A | 92/23.68 | Solrad 11A | 126/0.61 | Solrad 11A | 157/0.45 | | |
| Solrad 11A | 30/22.85 | IMP-H | 63/4.55 | Solrad 11A | 95/0.62 | IMP-H | 126/6.13 | Vela 5B | 157/1.04 | | |
| Vela 5B | 31/6.06 | Solrad 11A | 64/0.39 | Vela 5B | 95/10.32 | Solrad 11B | 126/17.06 | Solrad 11B | 157/17.01 | | |
| Solrad 11A | 32/23.93 | Vela 5B | 64/1.06 | Solrad 11B | 95/16.44 | Moon | 127/1.19 | Vela 5B | 158/11.50 | | |

Table 3. Neutral Sheet Passes, Days 1-181 1977

| Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) |
|------------|-----------------------|----------------------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|
| IMP-H | 1/4.53 | 1/17.43 | Vela 5B | 60/8.00 | 60/18.24 | Solrad 11B | 130/2.77 | 130/9.37 |
| Solrad 11B | 1/18.03 | 1/22.06 | Solrad 11A | 60/12.88 | 60/18.82 | Solrad 11A | 132/6.63 | 132/11.57 |
| Moon | 4/5.30 | 4/9.82 | Solrad 11A | 61/3.61 | 61/8.03 | Vela 5B | 132/7.14 | 132/9.02 |
| Vela 5B | 4/12.30 | 4/19.49 | Moon | 63/8.32 | 63/19.77 | Solrad 11B | 135/4.36 | 135/9.70 |
| Moon | 4/16.45 | 5/11.93 | Solrad 11B | 63/10.23 | 63/14.74 | Vela 5B | 136/16.79 | 136/19.93 |
| Solrad 11B | 5/10.96 | 5/14.68 | Moon | 64/4.94 | 64/11.08 | Solrad 11A | 137/6.61 | 137/11.28 |
| Moon | 6/1.79 | 6/13.06 | Solrad 11A | 65/13.87 | 66/11.34 | Solrad 11B | 140/5.00 | 140/9.69 |
| Solrad 11B | 6/17.92 | 7/1.14 | Solrad 11B | 68/10.94 | 68/15.67 | IMP-H | 141/5.23 | 141/11.11 |
| Moon | 7/4.97 | 7/5.08 | Solrad 11A | 70/15.83 | 71/11.67 | Vela 5B | 141/12.84 | 141/15.30 |
| Vela 5B | 9/0.60 | 9/6.21 | Solrad 11B | 73/11.67 | 73/17.21 | Solrad 11A | 142/8.93 | 142/10.56 |
| IMP-J | 11/4.33 | 12/1.79 | Solrad 11A | 76/3.58 | 76/12.15 | Solrad 11A | 142/16.73 | 143/5.39 |
| Solrad 11B | 11/18.55 | 12/0.58 | Solrad 11B | 78/12.55 | 78/21.34 | Solrad 11B | 145/5.13 | 145/9.35 |
| Vela 5B | 13/19.77 | 13/23.59 | IMP-H | 78/15.02 | 78/17.60 | Vela 5B | 146/7.22 | 146/11.41 |
| Solrad 11A | 14/15.75 | 14/19.05 | Solrad 11B | 79/2.77 | 79/9.23 | Solrad 11A | 147/16.35 | 148/6.60 |
| Vela 5B | 18/11.14 | 18/18.04 | Solrad 11A | 81/7.41 | 81/12.82 | Solrad 11B | 150/5.96 | 150/8.83 |
| Solrad 11A | 19/15.55 | 19/23.05 | Solrad 11B | 83/13.84 | 84/10.21 | Vela 5B | 150/17.02 | 150/20.89 |
| Solrad 11B | 22/14.30 | 22/15.03 | Solrad 11A | 86/8.70 | 86/13.65 | Moon | 151/6.80 | 151/9.53 |
| Vela 5B | 22/22.16 | 23/3.81 | Solrad 11B | 88/22.63 | 89/11.02 | Moon | 151/15.04 | 151/19.74 |
| IMP-J | 23/4.20 | 24/1.34 | IMP-H | 90/17.09 | 92/8.57 | Moon | 152/5.57 | 153/15.70 |
| Solrad 11A | 24/15.65 | 25/3.06 | Solrad 11A | 91/9.53 | 91/14.75 | Solrad 11A | 152/16.46 | 153/6.90 |
| Solrad 11B | 27/14.07 | 27/18.07 | Moon | 92/13.73 | 92/16.38 | IMP-H | 153/6.54 | 153/11.14 |
| Vela 5B | 27/18.05 | 27/21.58 | Moon | 93/7.12 | 93/14.98 | Moon | 154/2.18 | 154/6.56 |
| Solrad 11A | 29/16.22 | 30/4.04 | Moon | 93/15.01 | 94/10.25 | Vela 5B | 155/12.69 | 155/15.46 |
| Vela 5B | 32/1.95 | 32/16.35 | Solrad 11B | 94/5.72 | 94/11.79 | Solrad 11B | 155/19.28 | 156/4.02 |
| Solrad 11B | 32/14.00 | 32/18.55 | Solrad 11A | 96/10.21 | 96/16.68 | Solrad 11A | 157/19.99 | 157/22.80 |
| Moon | 33/12.24 | 33/17.89 | Solrad 11B | 99/7.42 | 99/12.65 | Solrad 11A | 157/23.75 | 158/6.76 |
| Moon | 34/6.12 | 34/11.67 | Solrad 11A | 101/10.69 | 101/23.74 | Vela 5B | 160/7.09 | 160/11.35 |
| Solrad 11A | 34/17.93 | 35/2.92 | IMP-H | 103/13.17 | 103/16.08 | Solrad 11B | 160/13.49 | 161/5.12 |
| Moon | 34/18.18 | 35/9.98 | Solrad 11B | 104/8.34 | 104/13.63 | Solrad 11A | 163/1.04 | 163/6.43 |
| IMP-J | 34/21.66 | 35/6.91 | Solrad 11A | 106/10.97 | 107/8.44 | IMP-J | 163/18.16 | 164/5.32 |
| IMP-J | 35/16.03 | 35/22.23 | Solrad 11B | 109/8.93 | 109/15.21 | IMP-J | 164/9.66 | 164/12.02 |
| Vela 5B | 36/20.38 | 36/24.00 | Solrad 11A | 111/10.96 | 111/19.43 | Vela 5B | 164/17.15 | 164/22.59 |
| Solrad 11B | 37/14.19 | 37/19.87 | Solrad 11A | 111/23.64 | 112/9.68 | IMP-H | 165/5.54 | 165/9.15 |
| Solrad 11B | 38/1.18 | 38/3.07 | Solrad 11B | 114/9.22 | 114/20.77 | Solrad 11B | 165/18.40 | 166/5.28 |
| Solrad 11A | 40/11.64 | 40/15.08 | IMP-H | 116/9.86 | 116/13.69 | Solrad 11A | 168/5.99 | 168/6.01 |
| Vela 5B | 41/16.57 | 41/19.75 | Solrad 11A | 116/12.93 | 116/16.37 | Vela 5B | 169/12.12 | 169/15.42 |
| Solrad 11B | 42/14.79 | 43/8.00 | Solrad 11A | 117/4.30 | 117/10.47 | Solrad 11B | 170/21.96 | 171/5.07 |
| Solrad 11A | 45/11.60 | 45/15.59 | Solrad 11B | 119/9.21 | 120/7.24 | Vela 5B | 174/6.44 | 174/10.95 |
| Vela 5B | 46/4.94 | 46/14.70 | Solrad 11A | 122/5.72 | 122/11.06 | Solrad 11B | 176/1.97 | 176/4.70 |
| IMP-J | 47/6.02 | 47/7.82 | Vela 5B | 122/16.62 | 122/19.01 | IMP-J | 176/12.19 | 176/15.45 |
| IMP-J | 47/14.79 | 47/18.70 | Moon | 123/4.25 | 123/12.70 | IMP-H | 177/4.25 | 177/7.16 |
| Solrad 11B | 47/16.13 | 48/12.01 | Moon | 124/2.46 | 124/12.05 | Vela 5B | 178/16.64 | 179/0.46 |
| Solrad 11A | 50/11.80 | 50/16.06 | Solrad 11B | 124/9.94 | 125/8.69 | Moon | 180/17.27 | 180/20.98 |
| Solrad 11B | 52/22.03 | 53/1.87 | Solrad 11A | 127/6.89 | 127/11.48 | Moon | 181/4.02 | 181/10.43 |
| Solrad 11B | 53/8.93 | 53/13.90 | Vela 5B | 127/12.91 | 127/14.02 | Moon | 181/15.27 | 182/0.00 |
| Solrad 11A | 55/12.25 | 55/17.01 | IMP-H | 128/14.71 | 128/22.75 | | | |
| Vela 5B | 55/15.40 | 55/18.37 | IMP-H | 129/0.45 | 129/8.07 | | | |
| Solrad 11B | 58/9.59 | 58/14.20 | Solrad 11B | 129/13.94 | 129/18.66 | | | |

Table 4. Midlatitude Magnetotail Passes, Days 1-181 1977

| Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) |
|------------|-----------------------|----------------------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|
| IMP-H | 1/0.94 | 1/4.53 | Solrad 11B | 31/8.55 | 31/20.23 | Solrad 11B | 62/10.05 | 63/10.23 | Solrad 11B | 100/4.82 | 100/5.05 |
| Solrad 11B | 1/7.2.06 | 1/18.03 | Solrad 11B | 32/6.29 | 32/14.00 | Moon | 63/5.11 | 63/8.32 | Solrad 11A | 101/6.29 | 101/10.69 |
| IMP-H | 1/17.43 | 1/22.17 | Vela 5B | 32/16.35 | 32/21.04 | Solrad 11B | 63/14.74 | 63/19.06 | Solrad 11A | 101/23.74 | 102/12.93 |
| Solrad 11A | 2/18.98 | 2/20.09 | Solrad 11B | 32/18.55 | 32/23.06 | Moon | 63/19.77 | 64/4.94 | IMP-H | 103/8.79 | 103/13.17 |
| Solrad 11A | 3/6.03 | 4/4.31 | Moon | 33/17.89 | 34/06.12 | Moon | 64/11.08 | 65/14.21 | IMP-H | 103/16.08 | 103/19.25 |
| Moon | 3/18.70 | 4/5.30 | Solrad 11A | 34/8.84 | 34/17.93 | Solrad 11A | 65/8.12 | 65/13.87 | Solrad 11B | 103/17.93 | 103/19.03 |
| Vela 5B | 4/0.27 | 4/12.30 | Moon | 34/11.67 | 34/18.18 | IMP-H | 65/20.57 | 66/1.58 | Solrad 11B | 104/3.12 | 104/8.34 |
| Moon | 4/9.82 | 4/16.45 | IMP-J | 34/18.27 | 34/21.66 | Moon | 66/5.08 | 66/8.84 | Solrad 11B | 104/13.63 | 104/20.60 |
| Vela 5B | 4/19.49 | 4/23.63 | Solrad 11A | 35/2.92 | 35/11.07 | Solrad 11A | 66/11.34 | 66/12.03 | Solrad 11B | 105/1.61 | 105/9.06 |
| Moon | 5/11.93 | 6/1.79 | IMP-J | 35/6.91 | 35/16.03 | Solrad 11B | 67/12.94 | 67/17.16 | Solrad 11A | 106/6.61 | 106/10.97 |
| Solrad 11B | 5/14.68 | 5/20.88 | Moon | 35/9.98 | 35/17.52 | Solrad 11B | 68/4.78 | 68/10.94 | Solrad 11A | 107/8.44 | 107/13.58 |
| Solrad 11B | 6/9.66 | 6/17.92 | IMP-J | 35/22.23 | 36/5.86 | Solrad 11B | 68/15.67 | 69/4.07 | Solrad 11B | 109/4.54 | 109/8.93 |
| Moon | 6/13.06 | 6/17.87 | Moon | 35/23.74 | 36/14.18 | Vela 5B | 69/19.96 | 69/20.19 | Solrad 11B | 109/15.21 | 110/11.94 |
| Moon | 7/1.12 | 7/4.97 | Solrad 11B | 36/11.96 | 36/17.43 | Solrad 11A | 70/8.71 | 70/15.83 | Solrad 11A | 111/8.94 | 111/10.96 |
| Solrad 11B | 7/1.14 | 7/2.07 | IMP-J | 36/15.54 | 36/23.28 | Solrad 11A | 71/11.67 | 71/15.26 | Solrad 11A | 111/19.43 | 111/23.64 |
| Solrad 11A | 8/6.32 | 9/4.45 | Vela 5B | 36/18.94 | 36/20.38 | Solrad 11B | 73/6.44 | 73/11.67 | Solrad 11A | 112/9.68 | 112/14.43 |
| Vela 5B | 8/20.43 | 9/0.60 | Vela 5B | 36/24.00 | 37/12.81 | Solrad 11B | 73/17.21 | 74/9.00 | Solrad 11B | 114/5.16 | 114/9.22 |
| Vela 5B | 9/6.21 | 9/15.48 | Solrad 11B | 37/7.55 | 37/14.19 | Vela 5B | 74/13.97 | 74/16.54 | Solrad 11B | 114/20.77 | 115/12.61 |
| Solrad 11A | 9/11.93 | 9/15.04 | Solrad 11B | 37/19.87 | 38/1.18 | Solrad 11A | 75/9.09 | 76/3.58 | IMP-H | 115/16.23 | 116/9.86 |
| Solrad 11B | 10/14.97 | 10/19.40 | Solrad 11A | 39/9.23 | 40/11.64 | Solrad 11A | 76/12.15 | 76/15.79 | IMP-H | 116/13.69 | 116/16.53 |
| IMP-J | 10/23.47 | 11/4.33 | Vela 5B | 41/11.93 | 41/16.57 | Solrad 11B | 78/7.41 | 78/12.55 | Solrad 11A | 116/16.37 | 117/4.30 |
| Solrad 11B | 11/8.00 | 11/18.55 | Solrad 11B | 41/15.97 | 41/16.33 | IMP-H | 78/12.10 | 78/15.02 | Solrad 11A | 117/10.47 | 117/15.51 |
| Solrad 11B | 12/0.58 | 12/6.08 | Vela 5B | 41/19.75 | 41/23.40 | IMP-H | 78/17.60 | 78/19.16 | Vela 5B | 117/18.09 | 118/0.01 |
| IMP-J | 12/1.79 | 12/3.25 | Solrad 11B | 42/8.27 | 42/14.79 | Solrad 11B | 78/21.34 | 79/2.72 | Solrad 11B | 119/5.93 | 119/9.21 |
| Solrad 11A | 13/6.70 | 14/3.55 | Solrad 11A | 44/9.60 | 45/11.60 | Solrad 11B | 79/3.23 | 79/13.01 | Solrad 11B | 120/7.24 | 120/13.32 |
| Vela 5B | 13/15.49 | 13/19.77 | Solrad 11A | 45/15.59 | 45/20.00 | Solrad 11A | 80/9.31 | 81/7.41 | Solrad 11A | 121/16.93 | 122/5.72 |
| Vela 5B | 13/23.59 | 14/3.49 | Vela 5B | 46/14.70 | 46/19.13 | Solrad 11A | 81/12.82 | 81/16.72 | Moon | 121/21.98 | 123/4.25 |
| IMP-H | 14/7.71 | 14/15.36 | IMP-J | 47/7.82 | 47/14.79 | Solrad 11B | 83/8.00 | 83/13.84 | Solrad 11A | 122/11.06 | 122/17.16 |
| Solrad 11A | 14/10.68 | 14/15.75 | Solrad 11B | 47/8.84 | 47/16.13 | Solrad 11B | 84/10.21 | 84/14.30 | Vela 5B | 122/13.97 | 122/16.62 |
| Solrad 11B | 16/7.76 | 17/6.90 | IMP-J | 47/18.70 | 47/22.99 | Solrad 11A | 85/12.93 | 85/19.96 | Solrad 11A | 123/4.73 | 123/8.07 |
| Solrad 11B | 17/10.15 | 17/11.02 | IMP-J | 48/8.23 | 48/16.84 | Solrad 11A | 86/1.38 | 86/8.70 | Moon | 123/12.70 | 124/2.46 |
| Vela 5B | 17/23.93 | 18/11.14 | Solrad 11A | 49/9.92 | 49/20.65 | Solrad 11A | 86/13.65 | 86/18.28 | Moon | 124/12.05 | 124/16.23 |
| Solrad 11A | 18/7.94 | 18/20.94 | Solrad 11A | 50/1.97 | 50/11.80 | Solrad 11A | 87/3.55 | 87/4.05 | Solrad 11B | 125/5.69 | 125/14.16 |
| Vela 5B | 18/18.04 | 18/22.67 | Solrad 11A | 50/16.06 | 51/0.01 | Solrad 11B | 88/8.32 | 88/22.63 | Solrad 11A | 126/20.93 | 126/22.37 |
| Solrad 11A | 19/9.20 | 19/15.55 | Vela 5B | 50/21.95 | 51/9.73 | Solrad 11B | 89/11.02 | 89/14.95 | Solrad 11A | 127/0.14 | 127/6.39 |
| Solrad 11B | 21/7.92 | 22/14.30 | Solrad 11B | 52/9.37 | 52/22.03 | IMP-H | 90/13.75 | 90/17.09 | Vela 5B | 127/9.82 | 127/12.91 |
| Vela 5B | 22/18.76 | 22/22.16 | Solrad 11B | 53/1.87 | 53/8.93 | Solrad 11A | 90/16.93 | 90/17.69 | Solrad 11A | 127/11.48 | 128/11.53 |
| IMP-J | 22/20.33 | 23/4.20 | Solrad 11B | 53/13.90 | 53/16.03 | Solrad 11A | 91/4.38 | 91/9.53 | IMP-H | 128/9.66 | 128/14.71 |
| Vela 5B | 23/3.81 | 23/14.55 | IMP-H | 53/18.79 | 54/2.96 | Solrad 11A | 91/14.75 | 92/8.06 | IMP-H | 128/22.75 | 129/0.45 |
| Solrad 11A | 23/11.94 | 23/18.46 | Solrad 11A | 54/11.98 | 54/16.74 | Moon | 92/16.38 | 92/21.66 | IMP-H | 129/8.07 | 129/12.99 |
| IMP-J | 24/1.34 | 24/5.24 | Solrad 11A | 55/5.99 | 55/12.25 | Moon | 93/2.02 | 93/7.12 | Solrad 11B | 129/18.66 | 130/2.77 |
| Solrad 11A | 24/8.52 | 24/15.65 | Vela 5B | 55/14.97 | 55/15.40 | Solrad 11B | 93/8.99 | 94/5.72 | Solrad 11B | 130/9.37 | 130/15.18 |
| IMP-J | 24/16.29 | 24/21.09 | Solrad 11A | 55/17.01 | 56/4.02 | Moon | 93/14.98 | 93/15.01 | Vela 5B | 131/18.36 | 132/7.14 |
| Solrad 11B | 26/8.24 | 27/14.07 | Vela 5B | 55/18.37 | 55/21.43 | Moon | 94/10.25 | 94/16.86 | Solrad 11A | 132/1.91 | 132/6.63 |
| Vela 5B | 27/13.79 | 27/18.05 | Solrad 11B | 57/9.79 | 58/9.59 | Solrad 11B | 94/11.79 | 94/15.88 | Solrad 11A | 132/11.57 | 133/12.21 |
| Solrad 11B | 27/18.07 | 27/19.05 | Solrad 11B | 58/14.20 | 58/17.90 | Moon | 95/0.87 | 95/13.54 | Solrad 11B | 134/17.95 | 135/4.36 |
| Vela 5B | 27/21.58 | 28/1.79 | Solrad 11A | 60/7.28 | 60/12.88 | Solrad 11A | 96/5.66 | 96/10.21 | Solrad 11B | 135/9.70 | 135/16.82 |
| Solrad 11A | 28/15.94 | 28/17.33 | IMP-J | 60/7.54 | 60/15.29 | Solrad 11A | 96/16.68 | 97/12.06 | Solrad 11B | 136/4.02 | 136/10.03 |
| Solrad 11A | 29/8.57 | 29/16.22 | Vela 5B | 60/13.24 | 60/17.56 | Solrad 11B | 98/12.99 | 98/17.42 | Vela 5B | 136/13.83 | 136/16.79 |
| Solrad 11A | 30/4.04 | 30/7.07 | Solrad 11A | 60/18.82 | 61/3.61 | Solrad 11B | 99/12.65 | 99/17.38 | Vela 5B | 136/19.93 | 137/4.01 |

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Table 4. Midlatitude Magnetotail Passes, Days 1-181 1977 (concluded)

| Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) |
|------------|-----------------------|----------------------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|------------|-----------------------|----------------------|
| Solrad 11A | 137/4.93 | 137/6.61 | Moon | 151/9.53 | 151/15.04 | Solrad 11B | 162/3.47 | 162/6.06 | Solrad 11A | 173/16.40 | 174/14.78 |
| Solrad 11A | 137/11.28 | 138/12.85 | Moon | 151/19.74 | 152/5.57 | Solrad 11A | 162/23.99 | 163/1.04 | Vela 5B | 173/19.41 | 174/6.44 |
| Solrad 11B | 139/21.95 | 140/5.00 | IMP-H | 152/11.94 | 152/18.70 | Solrad 11A | 163/6.43 | 163/14.72 | Vela 5B | 174/10.95 | 174/14.07 |
| Solrad 11B | 140/9.69 | 141/12.25 | Solrad 11A | 152/16.00 | 152/16.46 | IMP-J | 163/14.93 | 163/19.16 | IMP-J | 175/19.18 | 176/12.19 |
| IMP-H | 140/10.59 | 141/5.28 | IMP-H | 153/1.14 | 153/6.54 | Solrad 11A | 163/13.09 | 164/14.24 | Solrad 11B | 176/4.70 | 176/9.52 |
| Vela 5B | 141/9.50 | 141/12.84 | Solrad 11A | 153/6.90 | 153/14.56 | IMP-J | 164/5.32 | 164/9.66 | IMP-J | 176/15.45 | 176/18.37 |
| IMP-H | 141/11.11 | 141/15.36 | IMP-H | 153/11.14 | 153/18.18 | Vela 5B | 164/12.61 | 164/17.15 | Solrad 11B | 176/18.81 | 177/15.56 |
| Vela 5B | 141/15.30 | 141/17.63 | Moon | 153/15.70 | 154/2.18 | IMP-H | 164/18.81 | 164/19.55 | IMP-H | 177/2.17 | 177/4.25 |
| Solrad 11A | 142/10.56 | 142/16.73 | Solrad 11A | 154/3.71 | 154/8.07 | Vela 5B | 164/22.59 | 165/9.73 | IMP-J | 177/4.64 | 177/6.57 |
| Solrad 11A | 143/5.39 | 143/13.45 | Moon | 154/6.56 | 154/9.37 | IMP-H | 165/1.32 | 165/5.54 | IMP-H | 177/7.16 | 177/10.91 |
| Solrad 11B | 145/1.95 | 145/5.13 | Vela 5B | 155/9.04 | 155/12.69 | IMP-H | 165/9.15 | 166/4.20 | IMP-H | 177/16.91 | 178/4.19 |
| Solrad 11B | 145/9.35 | 146/12.85 | Solrad 11B | 155/9.95 | 155/10.28 | Solrad 11B | 165/17.97 | 165/18.40 | Vela 5B | 178/10.80 | 178/16.64 |
| Vela 5B | 145/18.81 | 146/7.22 | Vela 5B | 155/15.46 | 155/18.10 | Solrad 11B | 166/5.28 | 166/13.47 | Solrad 11A | 178/16.85 | 179/14.59 |
| Vela 5B | 146/11.41 | 146/15.95 | Solrad 11B | 156/4.02 | 156/13.74 | Solrad 11B | 167/2.09 | 167/10.06 | Vela 5B | 179/0.46 | 179/9.58 |
| Solrad 11A | 147/12.92 | 147/16.35 | Solrad 11A | 157/22.80 | 157/23.75 | Solrad 11A | 168/6.01 | 168/10.95 | Solrad 11A | 180/1.56 | 180/4.07 |
| Solrad 11A | 148/6.60 | 148/14.01 | Solrad 11A | 158/6.76 | 158/15.09 | Solrad 11A | 168/15.88 | 169/14.59 | Moon | 180/13.94 | 180/17.27 |
| Solrad 11A | 149/4.98 | 149/5.00 | Solrad 11A | 159/1.61 | 159/12.07 | Vela 5B | 169/8.09 | 169/12.17 | Moon | 180/20.98 | 181/4.02 |
| Solrad 11B | 150/8.83 | 151/13.34 | Vela 5B | 159/19.36 | 160/7.09 | Vela 5B | 169/15.42 | 169/18.62 | Solrad 11B | 181/5.97 | 181/8.35 |
| Vela 5B | 150/13.50 | 150/17.02 | Vela 5B | 160/11.35 | 160/14.09 | Solrad 11B | 171/5.07 | 171/11.41 | Moon | 181/10.43 | 181/15.27 |
| IMP-J | 150/19.82 | 151/1.86 | Solrad 11B | 160/13.96 | 160/18.49 | Solrad 11B | 171/23.41 | 172/14.06 | Solrad 11B | 181/18.12 | 182/0.00 |
| Vela 5B | 150/20.89 | 151/9.50 | Solrad 11B | 161/5.12 | 161/13.91 | Solrad 11A | 173/7.98 | 173/9.55 | | | |

Table 5. High-Latitude Magnetotail Passes, Days 1-181 1977

| Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) | Satellite | Entry Time (Day/h) | Exit Time (Day/h) |
|------------|--------------------|-------------------|------------|--------------------|-------------------|------------|--------------------|-------------------|------------|--------------------|-------------------|
| Solrad 11B | 1/0.00 | 1/12.06 | Solrad 11A | 44/3.97 | 44/9.60 | Solrad 11A | 90/17.69 | 91/4.38 | Vela 5B | 145/11.98 | 145/18.81 |
| IMP-H | 1/22.17 | 3/15.40 | Vela 5B | 46/19.13 | 47/11.01 | Moon | 92/21.66 | 93/2.02 | Solrad 11B | 146/12.85 | 146/18.05 |
| Solrad 11A | 2/20.09 | 3/6.03 | Solrad 11B | 46/19.99 | 47/8.84 | Vela 5B | 93/19.98 | 94/6.01 | Vela 5B | 146/13.95 | 146/16.04 |
| Vela 5B | 3/21.96 | 4/0.27 | IMP-J | 47/22.99 | 48/8.23 | Solrad 11B | 94/15.88 | 95/1.05 | Solrad 11A | 148/14.01 | 149/4.98 |
| Solrad 11A | 4/4.31 | 4/11.04 | IMP-J | 48/16.84 | 50/0.30 | Moon | 94/16.86 | 95/0.87 | IMP-J | 149/22.65 | 150/19.82 |
| Vela 5B | 4/23.63 | 5/7.02 | Solrad 11A | 49/7.98 | 49/9.92 | Moon | 95/13.54 | 95/18.80 | Vela 5B | 150/3.99 | 150/13.50 |
| Solrad 11B | 5/20.88 | 6/9.66 | Solrad 11A | 49/20.65 | 50/1.97 | Solrad 11A | 95/20.93 | 96/5.66 | IMP-J | 151/1.86 | 151/9.75 |
| Moon | 6/17.87 | 7/1.12 | Vela 5B | 51/9.73 | 52/3.03 | Vela 5B | 98/10.98 | 98/23.01 | Vela 5B | 151/9.50 | 151/10.04 |
| Solrad 11A | 7/22.99 | 8/6.32 | Solrad 11B | 52/0.92 | 52/9.37 | Solrad 11A | 99/17.38 | 100/4.82 | Solrad 11B | 151/13.34 | 151/22.05 |
| Vela 5B | 8/14.93 | 8/20.43 | IMP-H | 52/2.48 | 53/18.79 | Solrad 11B | 101/0.93 | 101/6.29 | IMP-H | 152/18.70 | 153/1.14 |
| Solrad 11A | 9/4.45 | 9/11.93 | IMP-H | 54/2.96 | 54/4.22 | IMP-H | 101/21.75 | 103/8.79 | Solrad 11A | 153/14.56 | 154/3.71 |
| IMP-J | 9/14.80 | 10/23.47 | Solrad 11A | 54/10.74 | 55/5.99 | Solrad 11A | 102/12.93 | 102/16.06 | IMP-H | 153/18.18 | 154/20.45 |
| Vela 5B | 9/15.48 | 9/23.07 | Vela 5B | 55/21.43 | 56/19.04 | Vela 5B | 103/4.99 | 103/16.02 | Vela 5B | 154/20.95 | 155/9.04 |
| Solrad 11B | 10/19.40 | 11/8.00 | Solrad 11B | 57/4.93 | 57/9.79 | Solrad 11B | 103/19.03 | 104/3.12 | Vela 5B | 155/18.10 | 156/4.03 |
| Solrad 11B | 12/6.08 | 12/7.01 | Solrad 11B | 58/17.90 | 58/20.04 | Solrad 11B | 104/20.60 | 105/1.61 | Solrad 11B | 156/13.74 | 157/2.06 |
| Solrad 11A | 13/3.00 | 13/6.70 | Solrad 11A | 59/15.99 | 60/7.28 | Solrad 11A | 106/4.94 | 106/6.61 | Solrad 11A | 158/15.09 | 159/1.61 |
| Vela 5B | 13/6.97 | 13/15.49 | IMP-J | 59/15.38 | 60/7.54 | Solrad 11A | 107/13.58 | 107/20.06 | Vela 5B | 159/12.96 | 159/19.36 |
| IMP-H | 13/19.46 | 14/7.71 | IMP-J | 60/15.29 | 62/13.31 | Vela 5B | 107/22.99 | 108/10.02 | Vela 5B | 160/14.09 | 160/22.00 |
| Solrad 11A | 14/3.40 | 14/10.68 | Vela 5B | 60/17.56 | 61/11.05 | Solrad 11B | 108/21.93 | 109/4.54 | Solrad 11B | 161/13.91 | 162/3.47 |
| Vela 5B | 14/3.49 | 14/16.04 | Solrad 11B | 62/18.94 | 62/10.05 | Solrad 11B | 110/11.94 | 110/13.07 | IMP-J | 162/10.41 | 163/14.93 |
| IMP-H | 14/15.36 | 16/8.57 | Moon | 63/11.44 | 63/5.11 | Solrad 11A | 112/14.43 | 113/0.07 | Solrad 11A | 163/14.72 | 163/14.93 |
| Solrad 11A | 15/18.99 | 16/7.76 | Solrad 11B | 63/19.06 | 64/0.06 | Vela 5B | 112/16.98 | 113/5.01 | Vela 5B | 164/4.97 | 164/12.61 |
| Solrad 11B | 17/6.90 | 17/10.15 | IMP-H | 64/11.82 | 65/20.57 | Solrad 11B | 114/1.93 | 114/5.16 | Solrad 11A | 164/14.24 | 164/16.06 |
| Solrad 11A | 18/20.94 | 19/9.20 | Solrad 11A | 64/19.99 | 65/8.12 | IMP-H | 114/18.83 | 115/16.23 | IMP-H | 164/19.55 | 165/1.32 |
| Vela 5B | 18/22.67 | 19/8.08 | Vela 5B | 65/1.97 | 66/4.01 | Solrad 11B | 115/12.61 | 115/18.00 | Vela 5B | 165/9.75 | 165/15.02 |
| Solrad 11B | 20/23.93 | 21/7.92 | Moon | 65/14.21 | 66/5.08 | IMP-H | 116/16.53 | 117/2.61 | IMP-H | 166/4.20 | 167/4.03 |
| IMP-J | 22/3.45 | 22/20.33 | IMP-H | 66/1.58 | 66/11.58 | Vela 5B | 117/9.98 | 117/18.09 | Solrad 11B | 166/13.47 | 167/2.09 |
| Vela 5B | 22/15.99 | 22/18.76 | Solrad 11B | 67/17.16 | 68/4.78 | Solrad-11A | 117/15.51 | 118/4.07 | Solrad 11A | 168/10.95 | 168/15.88 |
| Vela 5B | 23/14.55 | 24/1.04 | Vela 5B | 69/20.19 | 70/20.03 | Solrad 11B | 120/13.32 | 120/22.02 | Vela 5B | 168/20.98 | 169/8.09 |
| Solrad 11A | 23/18.46 | 24/8.52 | Solrad 11A | 69/23.99 | 70/8.71 | Vela 5B | 122/2.00 | 122/13.97 | Solrad 11A | 169/14.59 | 169/20.06 |
| IMP-J | 24/5.24 | 24/16.29 | Solrad 11A | 71/15.26 | 71/16.04 | Solrad 11A | 122/17.16 | 123/4.73 | Vela 5B | 169/18.62 | 170/8.05 |
| Solrad 11B | 26/3.94 | 26/8.24 | Solrad 11B | 72/16.96 | 73/6.44 | Moon | 124/16.23 | 125/2.60 | Solrad 11B | 171/11.41 | 171/23.41 |
| IMP-H | 26/16.54 | 29/2.86 | IMP-J | 72/17.39 | 74/20.34 | Solrad 11B | 125/14.16 | 126/2.02 | Solrad 11A | 173/9.55 | 173/16.40 |
| Vela 5B | 27/8.96 | 27/13.79 | Vela 5B | 74/16.54 | 75/12.03 | Vela 5B | 126/18.98 | 127/9.82 | Vela 5B | 173/13.93 | 173/19.41 |
| Vela 5B | 28/1.79 | 28/17.06 | Solrad 11A | 75/4.93 | 75/9.09 | Solrad 11A | 126/22.37 | 127/0.14 | Vela 5B | 174/14.07 | 175/1.05 |
| Solrad 11A | 28/17.33 | 29/8.57 | Solrad 11A | 76/15.79 | 76/20.04 | IMP-H | 127/12.70 | 128/9.66 | Solrad 11A | 174/14.78 | 175/0.07 |
| Solrad 11B | 31/7.95 | 31/8.55 | IMP-H | 76/19.24 | 78/12.10 | Solrad 11A | 128/11.53 | 128/12.07 | IMP-J | 174/22.35 | 175/19.18 |
| Solrad 11B | 31/20.23 | 32/6.29 | Solrad 11B | 77/20.97 | 78/7.41 | IMP-H | 129/12.99 | 129/22.11 | Solrad 11B | 176/9.52 | 176/18.81 |
| Vela 5B | 32/21.04 | 33/10.01 | Vela 5B | 79/7.98 | 80/5.00 | Solrad 11B | 130/15.18 | 131/6.03 | IMP-J | 176/18.37 | 177/4.64 |
| Solrad 11A | 33/19.95 | 34/8.84 | Solrad 11A | 80/8.93 | 80/9.31 | Vela 5B | 131/10.99 | 131/18.36 | IMP-H | 177/10.91 | 177/16.91 |
| IMP-J | 34/16.09 | 34/18.27 | Solrad 11A | 81/16.72 | 82/0.04 | Solrad 11A | 132/0.93 | 132/1.91 | Solrad 11B | 177/15.56 | 177/19.00 |
| Moon | 35/17.52 | 35/23.74 | Solrad 11B | 83/0.98 | 83/8.00 | Solrad 11A | 133/12.21 | 133/16.07 | IMP-H | 178/4.19 | 179/12.52 |
| IMP-J | 36/5.86 | 36/13.54 | Vela 5B | 84/2.00 | 84/21.01 | Solrad 11B | 135/16.82 | 136/4.02 | Vela 5B | 178/5.95 | 178/10.80 |
| Moon | 36/14.18 | 36/20.16 | Solrad 11B | 84/14.30 | 84/17.02 | Vela 5B | 136/3.96 | 136/13.83 | Solrad 11A | 178/11.98 | 178/16.85 |
| Solrad 11B | 36/17.43 | 37/7.55 | Solrad 11A | 85/19.96 | 86/1.38 | Solrad 11A | 138/12.85 | 138/20.07 | Vela 5B | 179/9.58 | 179/18.05 |
| IMP-J | 36/23.28 | 37/10.74 | IMP-J | 85/21.61 | 86/18.23 | IMP-H | 140/2.60 | 140/10.59 | Solrad 11A | 179/14.59 | 180/1.56 |
| Vela 5B | 37/12.81 | 38/2.04 | Solrad 11A | 86/18.28 | 87/3.55 | Vela 5B | 140/19.97 | 141/9.50 | Solrad 11B | 181/8.35 | 181/18.12 |
| Solrad 11A | 38/23.96 | 39/9.23 | Solrad 11B | 88/4.98 | 88/8.32 | Solrad 11B | 141/12.25 | 141/14.04 | | | |
| IMP-H | 39/11.76 | 41/17.98 | Vela 5B | 89/20.98 | 89/13.03 | IMP-H | 141/15.36 | 142/11.77 | | | |
| Solrad 11B | 41/16.33 | 42/8.27 | IMP-H | 89/4.92 | 90/13.75 | Vela 5B | 141/17.63 | 141/22.03 | | | |
| Vela 5B | 41/23.40 | 42/18.06 | Solrad 11B | 89/14.95 | 89/21.04 | Solrad 11A | 143/13.45 | 144/0.07 | | | |

Table 6. Hawkeye 1 Northern Cusp Passes, Days 1-181 1977
(Only those passes with durations in excess of 0.3 h are shown.)

| Entry Time (Day/h) | Exit Time (Day/h) | Entry Time (Day/h) | Exit Time (Day/h) |
|-----------------------|----------------------|-----------------------|----------------------|
| 4/20.72 | 5/3.59 | 109/23.30 | 109/23.93 |
| 7/5.75 | 7/7.26 | 112/0.05 | 112/1.73 |
| 19/20.36 | 20/2.77 | 116/4.66 | 116/7.10 |
| 22/4.98 | 22/6.90 | 118/9.75 | 118/10.32 |
| 28/10.73 | 28/11.97 | 122/19.78 | 122/20.13 |
| 34/23.06 | 35/1.96 | 124/22.28 | 124/22.91 |
| 37/4.23 | 37/6.51 | 126/23.43 | 127/0.68 |
| 41/9.17 | 41/10.17 | 131/3.75 | 131/6.11 |
| 43/9.84 | 43/11.79 | 133/8.81 | 133/10.32 |
| 49/23.60 | 50/1.10 | 137/18.71 | 137/19.05 |
| 52/3.42 | 52/5.88 | 139/21.28 | 139/21.88 |
| 56/8.27 | 56/9.90 | 141/22.96 | 141/23.71 |
| 58/10.10 | 58/10.81 | 146/2.82 | 146/5.23 |
| 64/23.59 | 65/0.28 | 148/7.98 | 148/9.41 |
| 65/2.42 | 65/2.81 | 150/13.73 | 150/14.18 |
| 67/2.68 | 67/4.85 | 152/17.70 | 152/18.03 |
| 71/7.42 | 71/9.63 | 154/20.27 | 154/20.87 |
| 73/8.86 | 73/9.88 | 161/2.57 | 161/4.26 |
| 80/1.37 | 80/2.02 | 163/7.06 | 163/8.42 |
| 82/1.80 | 82/3.80 | 165/12.09 | 165/13.11 |
| 86/6.50 | 86/9.05 | 167/16.66 | 167/16.98 |
| 88/8.36 | 88/8.90 | 169/19.29 | 169/19.87 |
| 95/0.34 | 95/0.99 | 176/2.28 | 176/3.40 |
| 97/0.97 | 97/2.74 | 178/6.25 | 178/7.53 |
| 101/5.61 | 101/8.03 | 180/11.21 | 180/12.14 |

Table 7. SSC Special Periods for Days 1-181 1977†

| Special Period Number | Approx Time (Day/h) | Satellite Regions | | | | | | | Comments |
|-----------------------|---------------------|-------------------|------------|------------|-----------|---------|---------|---------|--|
| | | Moon | Solrad 11B | Solrad 11A | Hawkeye 1 | IMP-H | IMP-J | Vela 5B | |
| 1 | 3/17 | P | I | MT | P | P | I | P | 4 boundary crossings within 5 h. |
| | 4/3 | MT | I | MT | DS | NS | I | MT | 3 satellites in MT for 4 h. |
| | 4/7 | Sh | I | HT | DS | NS | I | MT | 3 satellites in tail regions for 4 h. |
| | 4/20 | Sh | S | P | P → C* | S | I | Sh | 4 boundary crossings within 5 h. 2 satellites in Sh for 3 h. 6 h cusp pass. |
| 2 | 11/20 | I | Sh | I | C | I | Sh | I | 2 satellites in Sh; 1 in cusp for 6 h. |
| | 12/8 | I | NM | S | DS | S | NS | S | 3 boundary crossings within 5 h. |
| | 12/12 | I | NS | DS | DS | NS | NS | DS | 6 satellites in sheath for 10 h. |
| | 13/22 | I | I | MT | C | HT | I | Sh | 3 satellites in tail regions for 4 h. |
| | 14/4 | I | I | HT | P | HT | I | HT | 3 satellites in HT for 4 h. |
| 3 | 33/13 | P | S | P | P | I | NS | P | 5 boundary crossings within 5 h. |
| | 33/23 | MT | I | HT | DS | I | NS | NS | 2 satellites in tail regions for 3 h. |
| | 34/18 | MT | I | Sh | P | I | HT | I | |
| | 34/23 | Sh | I | Sh | C | I | Sh | I | 3 satellites in Sh for 5 h. 3 h cusp pass. |
| | 35/10 | MT | I | MT | DM | I | MT | I | 3 satellites in MT for 3 h. |
| | 36/22 | NS | HT | I | C | I | MT → HT | Sh | 3 satellites in tail regions for 4 h. 2 h cusp pass not simultaneous. |
| 4 | 38/14 | NS | NS | NS | DS | NS | NS | NS | 7 satellites in sheath for 9 h. |
| | 38/19 | NS | S | P | DS | NS | S | S | 4 boundary crossings within 2½ h. |
| 5 | 63/12 | Sh | Sh | I | P | NS | DS | I | 2 satellites in Sh for 4 h. |
| | 64/2 | MT | P | S | NS | NS | S | S | 4 boundary crossings within 4 h. |
| | 64/16 | MT | S | P | P | HT | I | P | 4 boundary crossings within 3 h. |
| | 65/4 | Sh | I | HT | C | HT | I | HT | 4 satellites in tail regions for 6 h. 2 h cusp pass not simultaneous. |
| | 66/2 | HT → MT | I | Sh | DS | MT → HT | I | HT | 4 satellites in tail regions for 2½ h. |
| | 66/10 | P | I | Sh | DS | P | I | P | 3 boundary crossings within 3 h. |
| | 67/4 | NS | NS | S | C | S | I | S | 3 boundary crossings within 5 h. 2½ h cusp pass. |
| 6 | 92/13 | P | S | P | P | I | I | DS | 4 boundary crossings within 3 h. |
| | 93/18 | Sh | MT | I | NS | I | I | HT | 3 satellites in tail regions for 13 h. |
| 7 | 146/4 | I | MT | I | C | I | I | MT | 2 satellites in MT; 1 in cusp for 2½ h. |
| | 146/23 | I | P | NS | P | I | I | P | 3 boundary crossings within 2 h. |
| | 147/5 | I | NS | NS | NS | I | I | NS | 4 satellites in sheath for 7 h. |
| | 147/12 | I | S | NM | NS | I | S | S | 3 boundary crossings within 5 h. |
| 8 | 150/7 | NS | Sh → MT | I | P | I | HT | HT | 3 satellites in tail regions for 13 h. |
| | 150/18 | NS | MT | I | NM | I | HT | Sh | 3 satellites in tail regions for 4 h. |
| | 151/0 | NS | MT | I | NM | I | MT | MT | 3 satellites in MT for 5 h. |
| | 151/8 | P | MT | I | P | S | P | MT | 4 boundary crossings within 3 h. |
| | 152/6 | Sh | NS | DS | NS | NS | NS | DS | 6 satellites in sheath for 6 h. |
| | 153/6 | Sh | I | Sh | NM | Sh | I | I | 3 satellites in Sh for ½ h. |
| | 154/4 | Sh | I | MT → HT | NS | HT | I | DS | 3 satellites in tail regions for 1½ h. |
| | 154/12 | P | S | P | P | HT | I | P | 5 boundary crossings within 5 h. |
| 9 | 177/4 | I | MT | I | P | P → Sh | HT → P | S | 4 boundary crossings within 5 h. 3 satellites in tail regions for 4½ h. |
| | 177/23 | S | P | DS | P | MT | NS | P | 3 magnetopause crossings within 4 h. |

*This type of notation indicates that the satellite passed from one to the other of two regions of interest (in this case, from the magnetopause P to the cusp C) at the approximate time shown in column 2.

†See Table 8 for definitions of symbols.

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Table 8. Definitions of Regions of Space for Special Periods

| Region | Symbol | Definition |
|------------------------------|--------|--|
| High-Latitude Magnetotail | HT | $X_{GSM} < -10R_E, Z_{GSM} - Z_{sh} > 6R_E$ |
| Midlatitude Magnetotail | MT | $X_{GSM} < -10R_E, 6R_E \geq Z_{GSM} - Z_{sh} \geq 2R_E$ |
| Neutral Sheet | Sh | $X_{GSM} < -10R_E, 2R_E > Z_{GSM} - Z_{sh} $ |
| Dayside Magnetosphere | DM | Magnetosphere for $X_{GSE} > 0R_E$ |
| Nightside Magnetosphere | NM | Magnetosphere for $0R_E \geq X_{GSE} \geq -10R_E$ |
| Dayside Magnetosheath | DS | Magnetosheath for $X_{GSE} > 0R_E$ |
| Nightside Magnetosheath | NS | Magnetosheath for $0R_E \geq X_{GSE}$ |
| Interplanetary Medium | I | |
| Dayside Access Region (cusp) | C | $80^\circ \geq \text{Mag. Lat} \geq 75^\circ, 16 \text{ h} \geq \text{Mag. Local Time} \geq 8 \text{ h}^+$ |
| Bow Shock Wave | S | Corresponds to 420 km/sec Solar Wind Speed |
| Magnetopause | P | Corresponds to 420 km/sec Solar Wind Speed |

GSM: Geocentric Solar Magnetospheric Coordinate System
GSE: Geocentric Solar Ecliptic Coordinate System

Table 9. Satellite Plots for Days 1-181 1977 Available on Microfilm

| Request Number | Number of Frames | Content |
|----------------|------------------|--|
| NSDF SX-A1A | 1086 | <p>181 pairs of boundary plots and long./lat plots, each showing 1 day for IMP-H, -J, and the Moon.</p> <p>181 pairs, as above, for Hawkeye 1.</p> <p>181 pairs, as above, for Solrad 11A, 11B, and Vela 5B.</p> |
| NSDF SX-A1B | 724 | <p>181 pairs of neutral sheet plots and X-Y plots, each showing 1 day for IMP-H, -J, and the Moon.</p> <p>181 pairs, as above, for Solrad 11A, 11B, and Vela 5B.</p> |
| NSDF SX-A1C | 289 | <p>16 frames of GSE plots, each showing 12 days for IMP-H, -J, and the Moon.</p> <p>91 frames of GSE plots, each showing 2 days for Hawkeye 1.</p> <p>91 frames of GSE plots, each showing 2 days for Solrad 11A, 11B, and Vela 5B.</p> <p>91 frames of SM plots, each showing 2 days for Hawkeye 1.</p> |

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GEOCENTRIC SOLAR ECLIPTIC X-Y PROJECTION

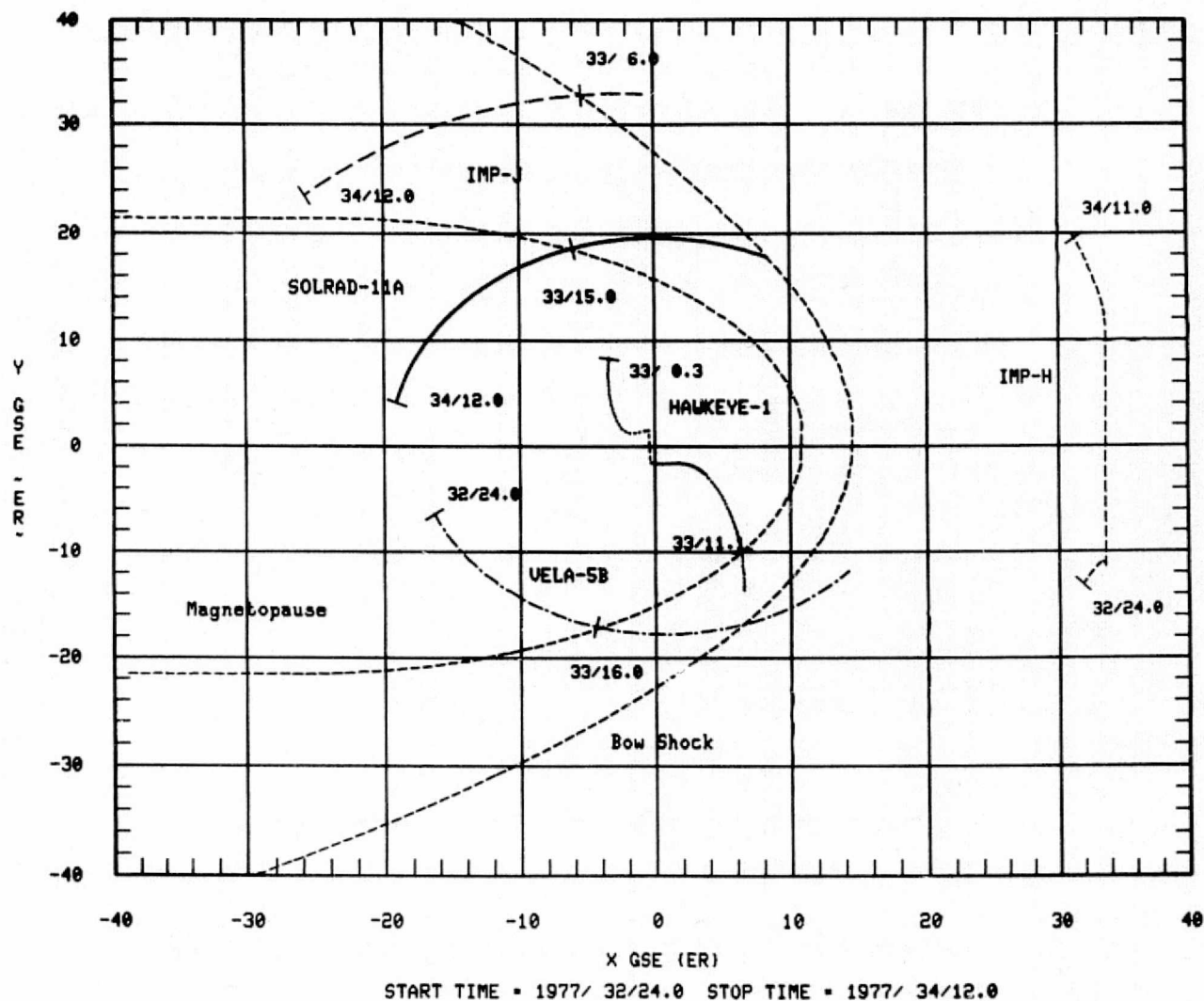


Figure 1. Sample GSE Projection

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BOUNDARY PLOT

SAT ID: SOLR-11A VELA-5B HAWKEYE1

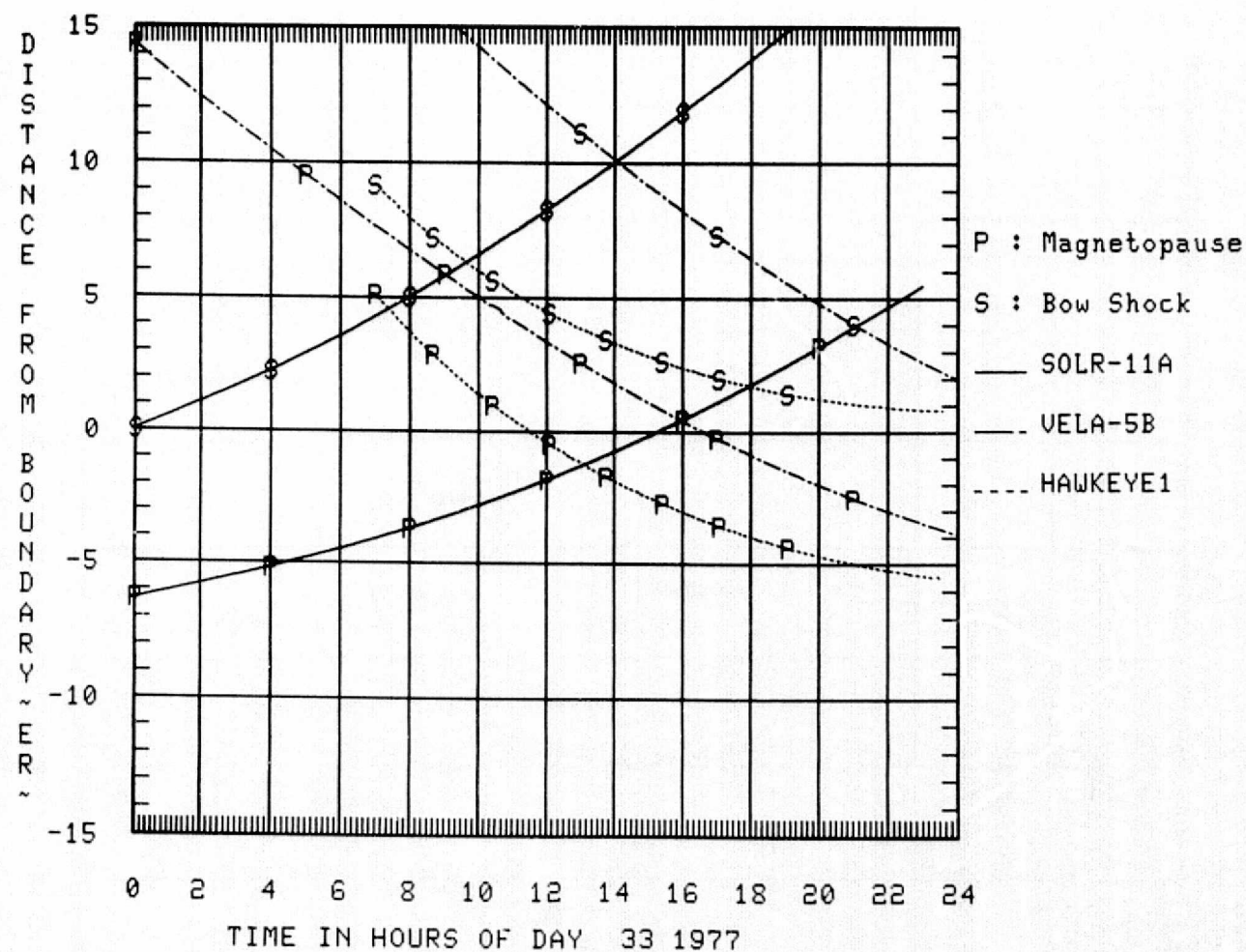


Figure 2. Sample Boundary Plot

BOUNDARY PLOT

SAT ID: SOLR-11A VELA-5B HAWKEYE1
ECLIPTIC POLAR COORDINATES

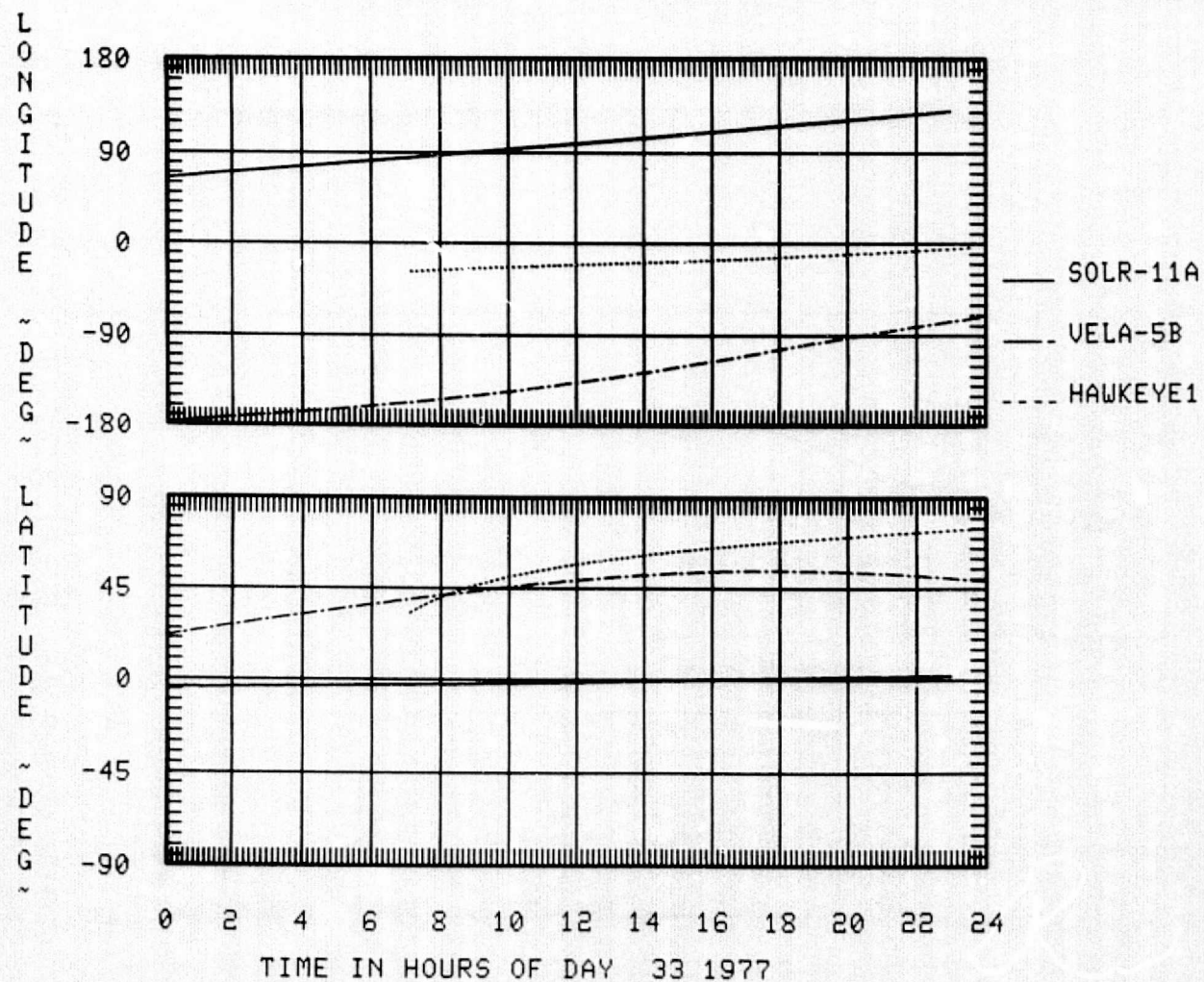


Figure 3. Sample Longitude/Latitude Plot

NEUTRAL SHEET PLOT

SAT ID: MOON

SOLR-11A IMP-J

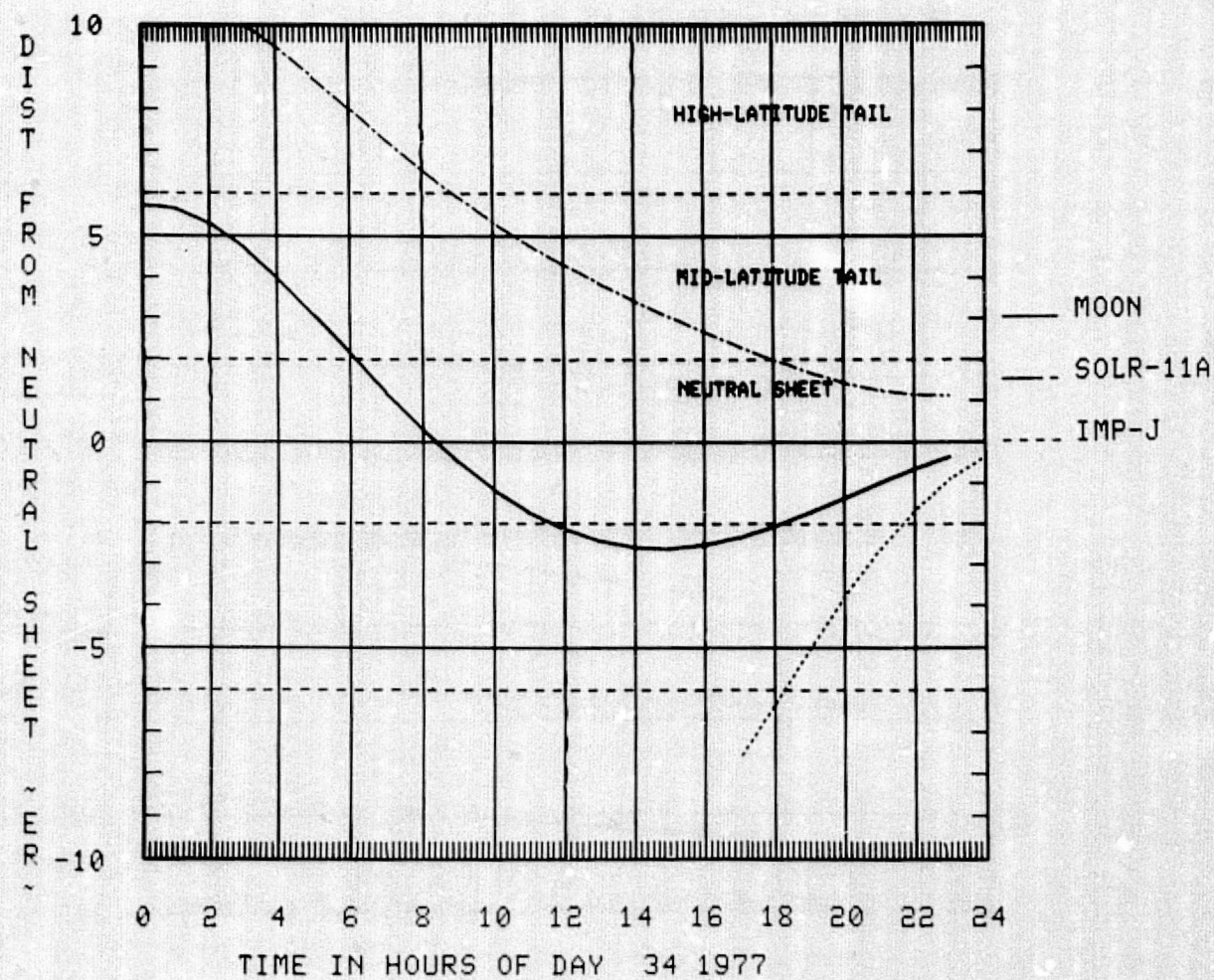


Figure 4. Sample Neutral Sheet Plot

NEUTRAL SHEET PLOT

SAT ID: MOON SOLR-11A IMP-J

GSM CARTESIAN COORDINATES

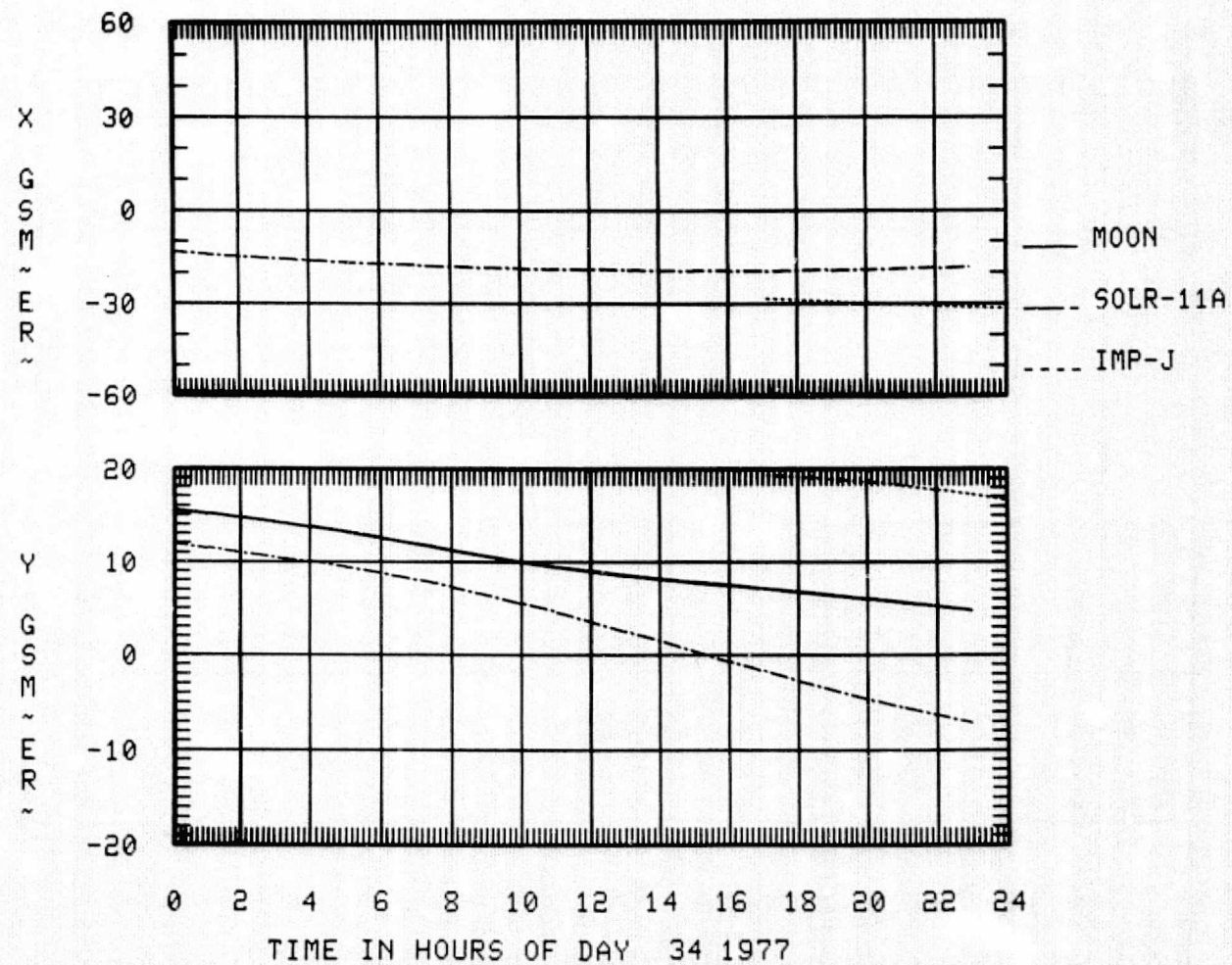


Figure 5. Sample X-Y Plot

MAGNETIC LATITUDE-MAGNETIC LOCAL TIME PROJECTION

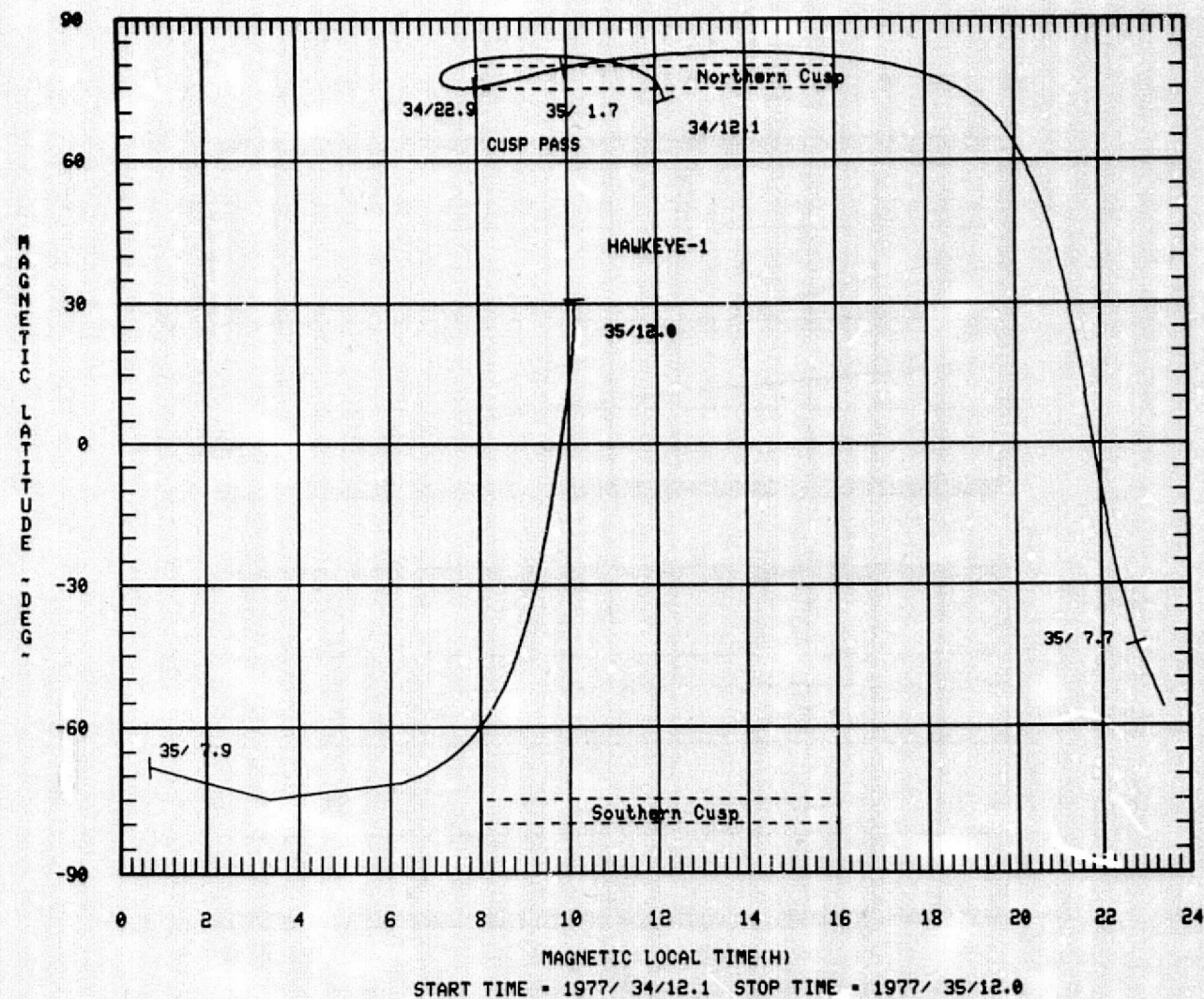


Figure 6. Sample SM Projection

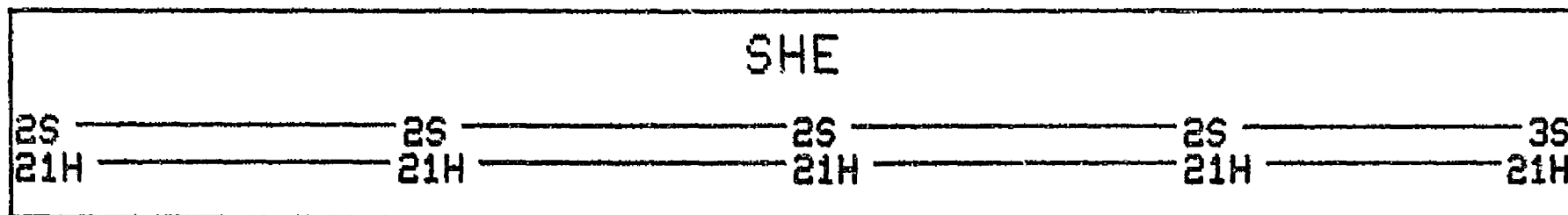
APPENDIX

DAILY BAR CHARTS FOR FIRST HALF OF 1977

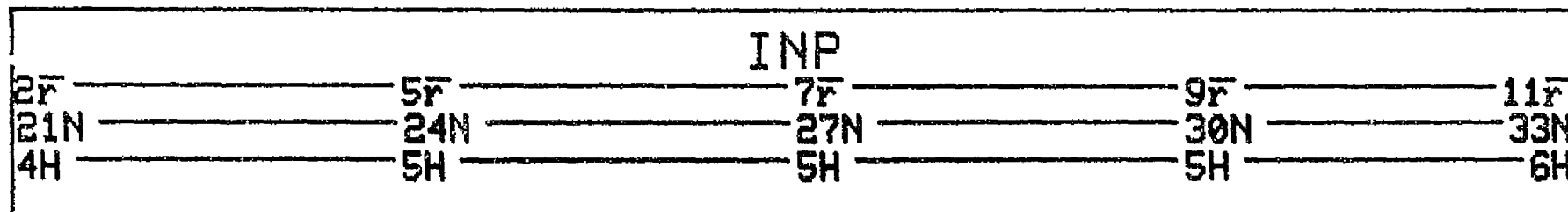
The bar chart explained in Section IV is used to provide a daily summary for the high-altitude satellites of this report. Referring to Table 7, one sees that the first SSC-recommended Special Period covers the period Day 3, Hour 17 to Day 4, Hour 20. By comparing the bar charts of Day 3 and Day 4 with these table entries, it is easy to see how much additional information the bar chart provides.

DAY 1 1977

MOON

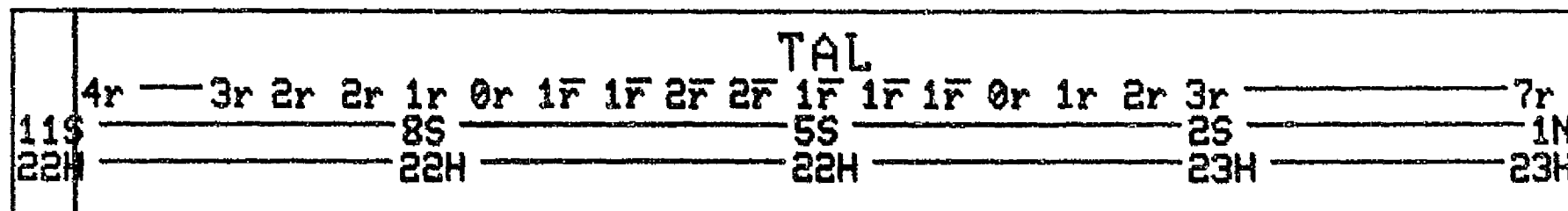


IMP-J



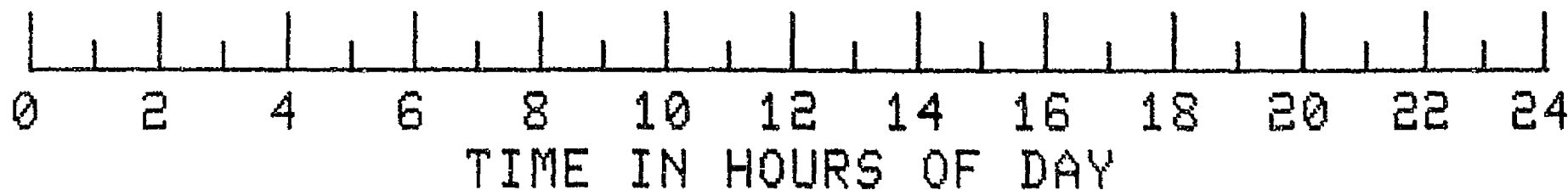
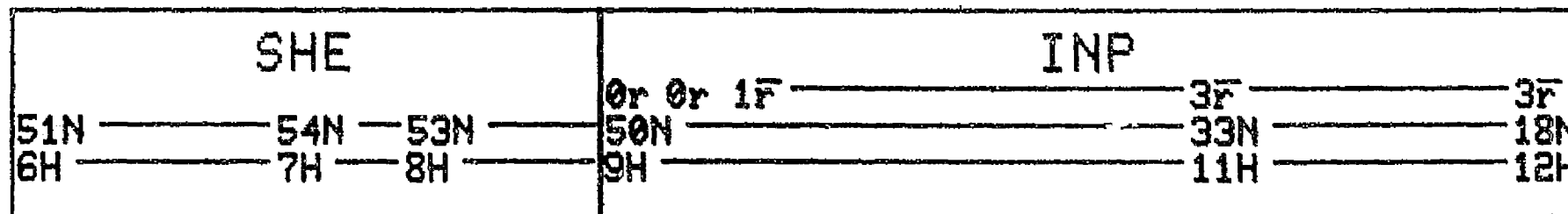
P

IMP-H



S

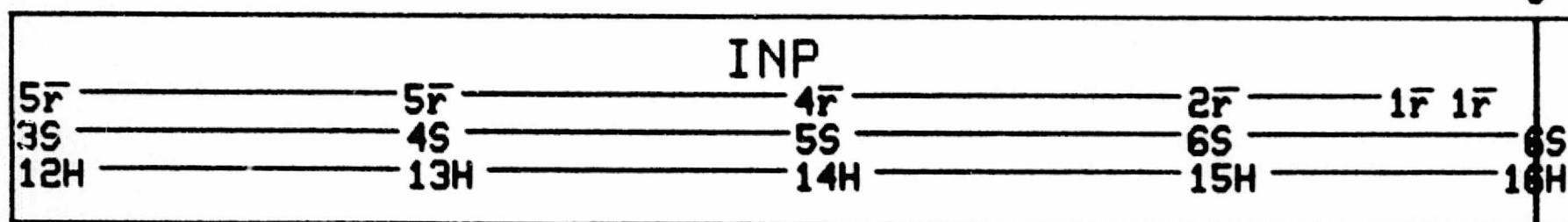
VELA
-5B



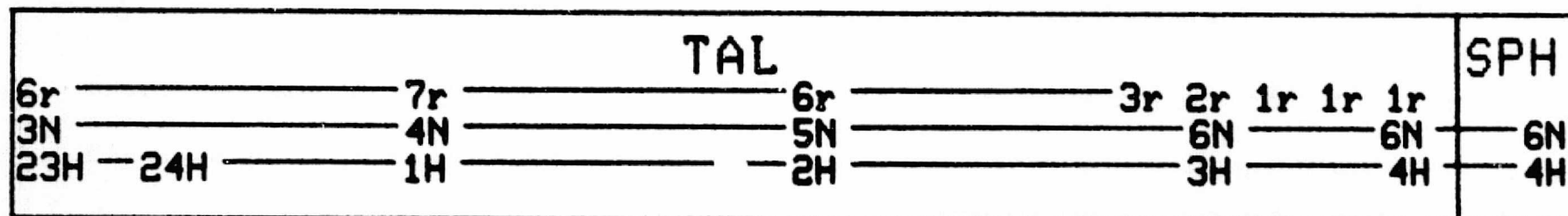
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DAY 1 1977

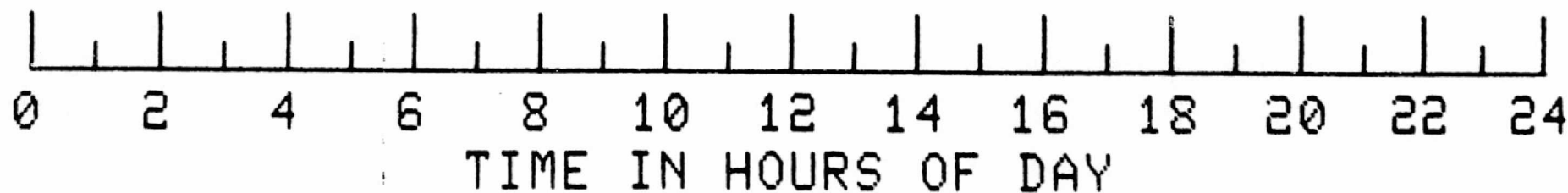
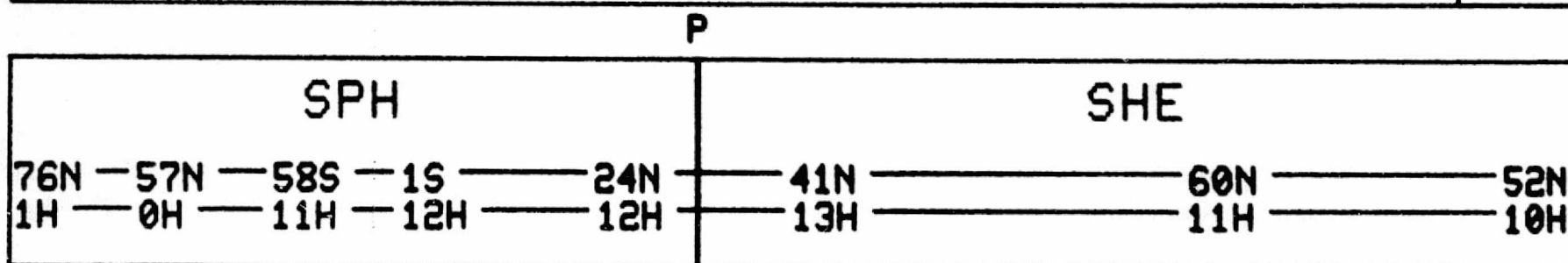
SOL
RAD
-11A



SOL
RAD
-11B



HAWK
EYE-1



DAY 2 1977

MOON

SHE

| | | | | |
|-----|-----|-----|-----|-----|
| 3S | 3S | 3S | 3S | 3S |
| 21H | 22H | 22H | 22H | 22H |

IMP-J

INP

| | | | | |
|-----|-----|-----|-----|-----|
| 11r | 13r | 14r | 15r | 16r |
| 33N | 35N | 37N | 38N | 40N |
| 6H | 6H | 7H | 7H | 8H |

IMP-H

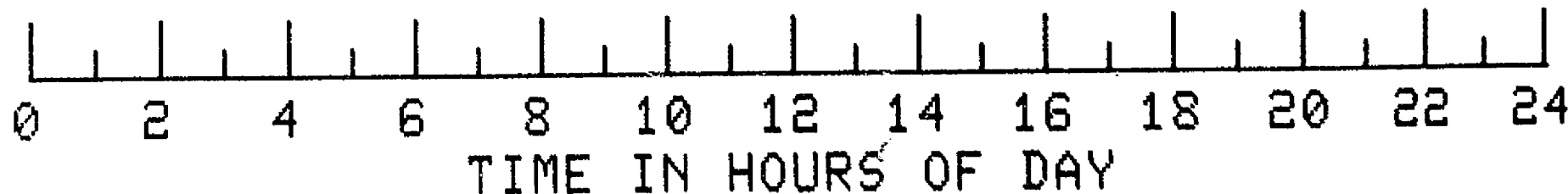
TAL

| | | | | |
|-----|-----|----|-----|-----|
| 7r | 8r | 8r | 7r | 9r |
| 1N | 4N | 7N | 10N | 13N |
| 23H | 24H | 0H | 1H | 1H |

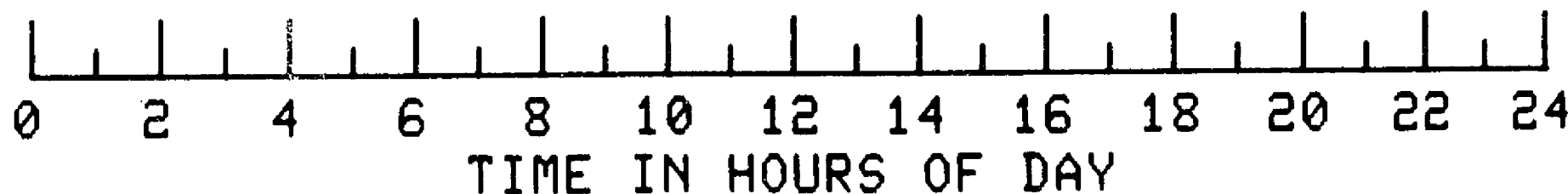
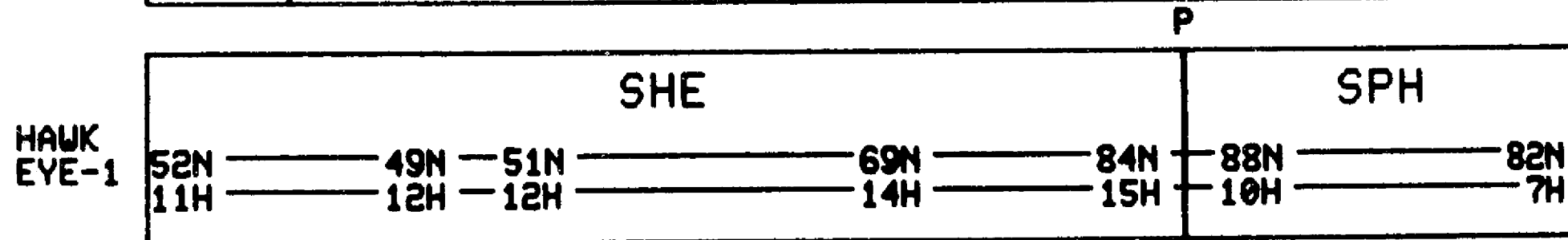
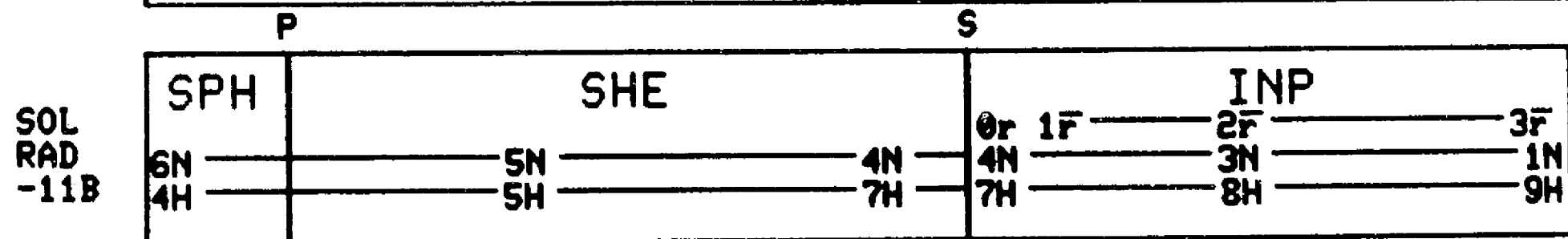
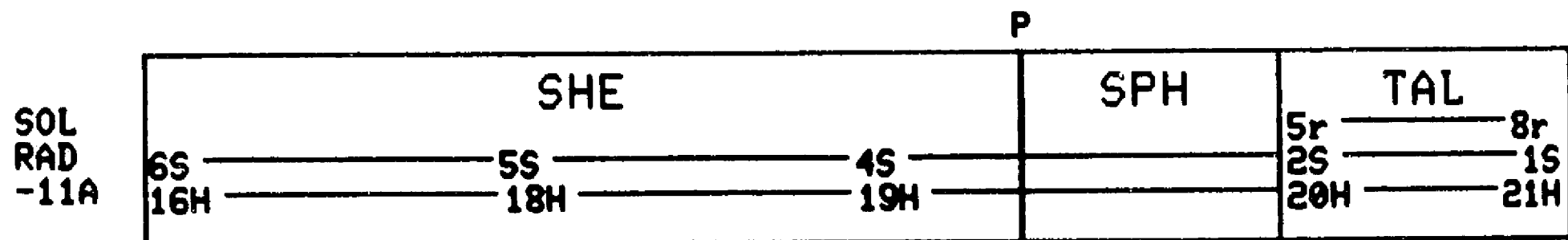
VELA
-5B

INP

| | | | | |
|-----|-----|-----|-----|-----|
| 4r | 4r | 4r | 2r | 1r |
| 18N | 3N | 12S | 26S | 38S |
| 12H | 13H | 14H | 15H | 16H |

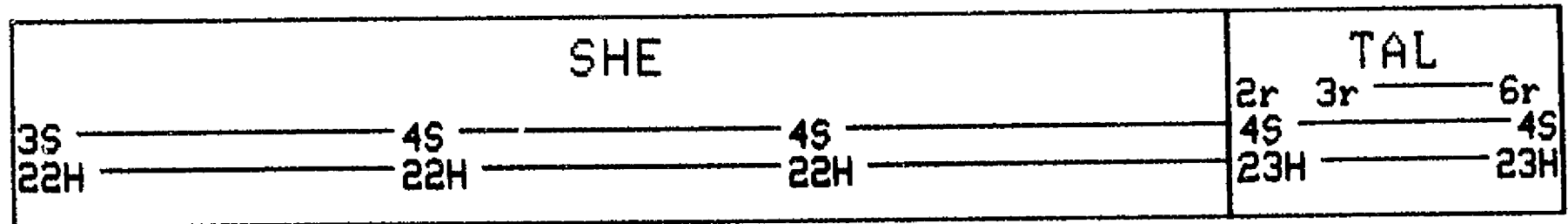


DAY 2 1977

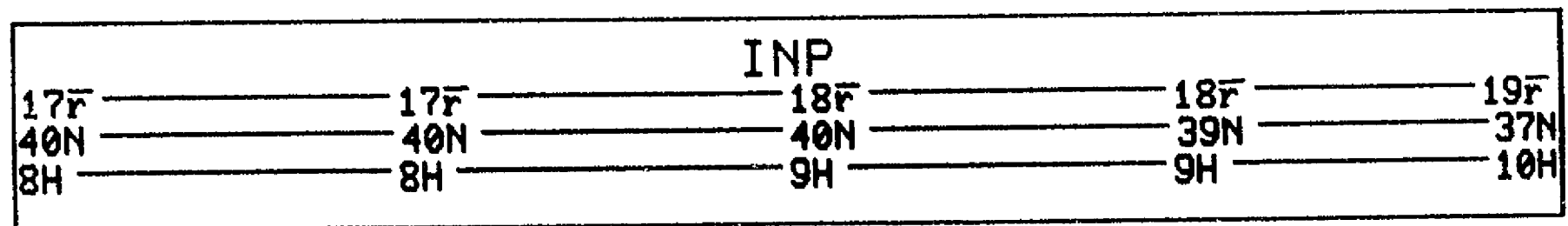


DAY 3 1977

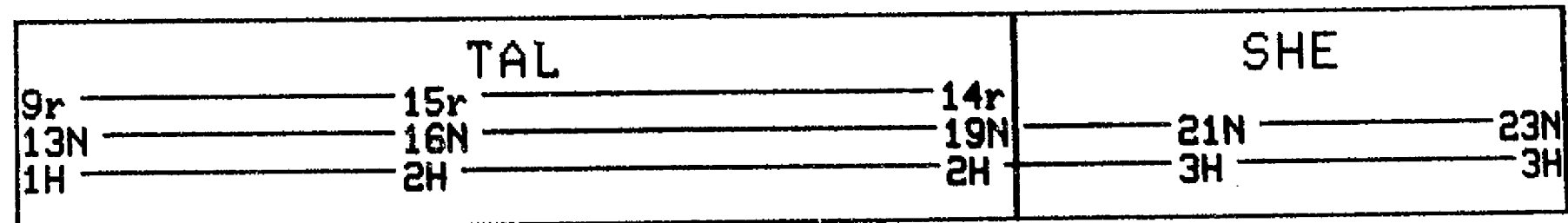
MOON



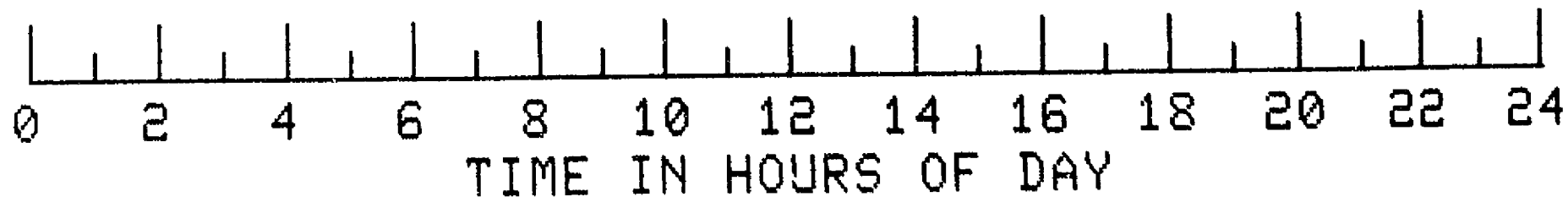
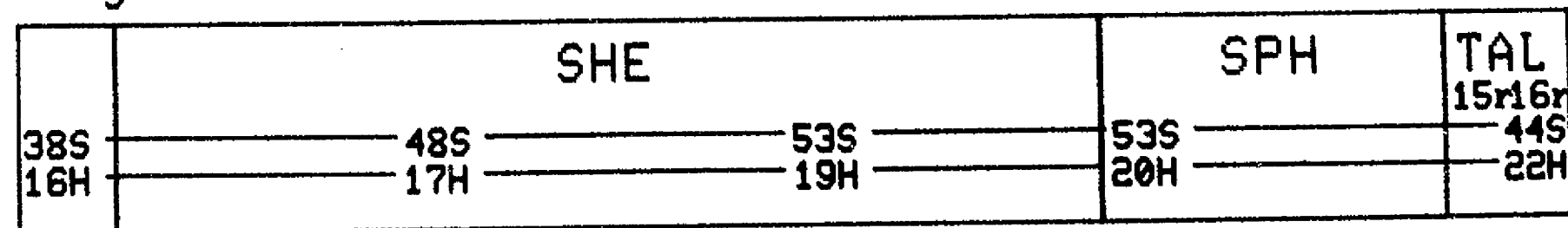
IMP-J



IMP-H

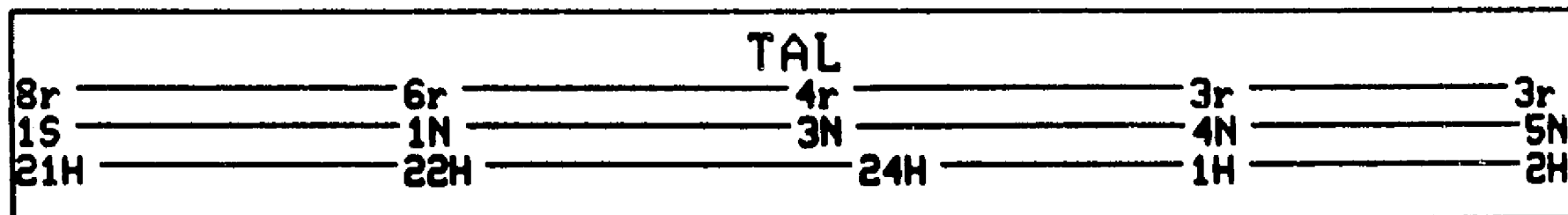


VELA
-5B

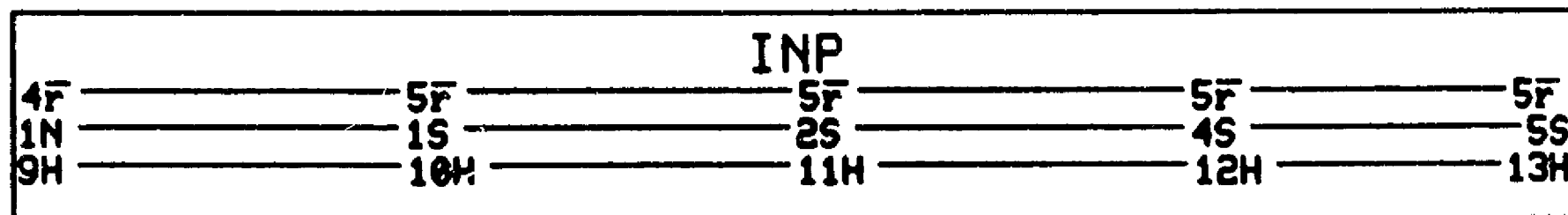


DAY 3 1977

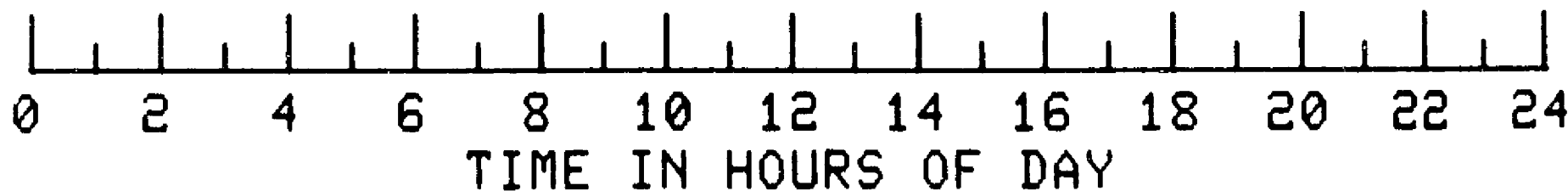
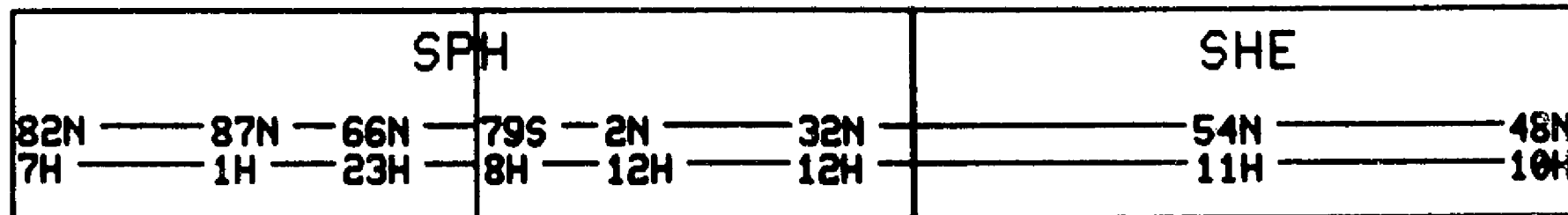
SOL
RAD
-11A



SOL
RAD
-11B

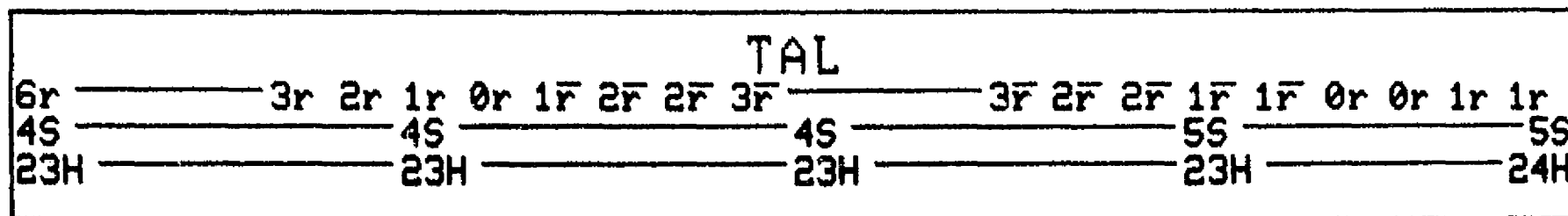


HAWK
EYE-1

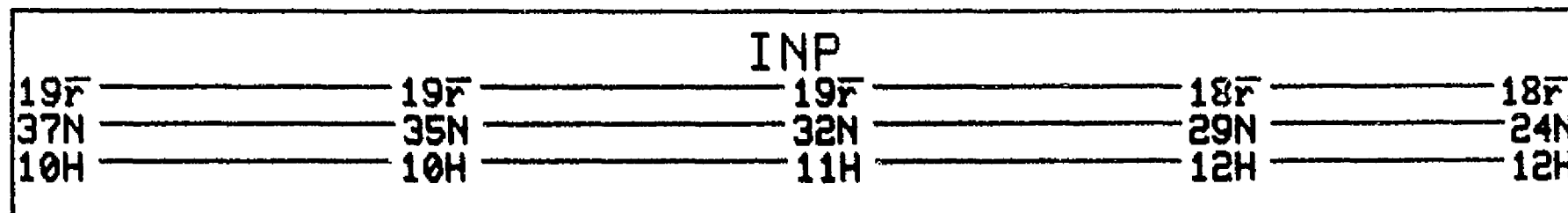


DAY 4 1977

MOON

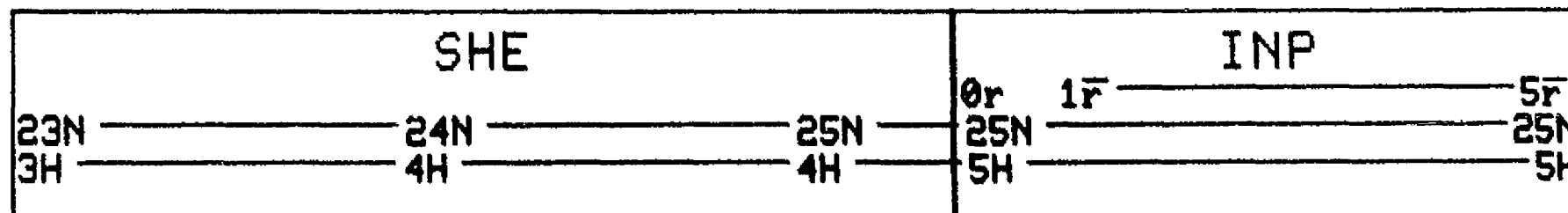


IMP-J

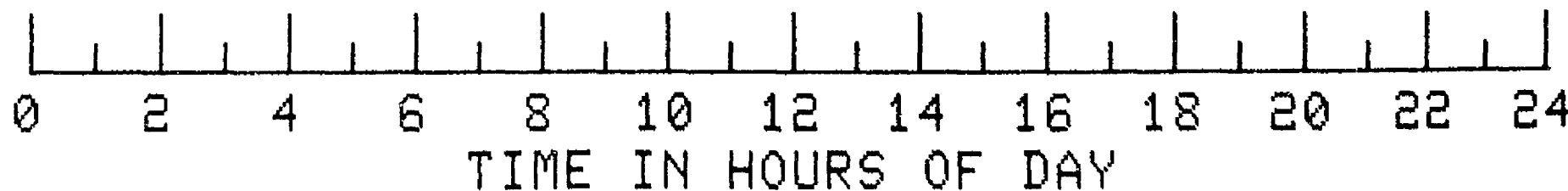
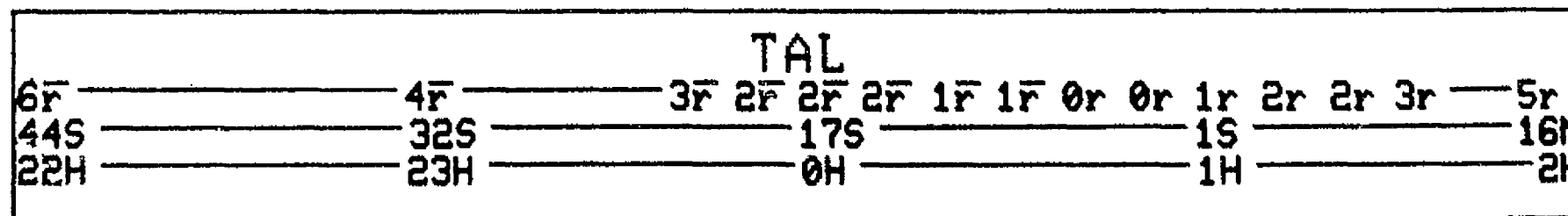


S

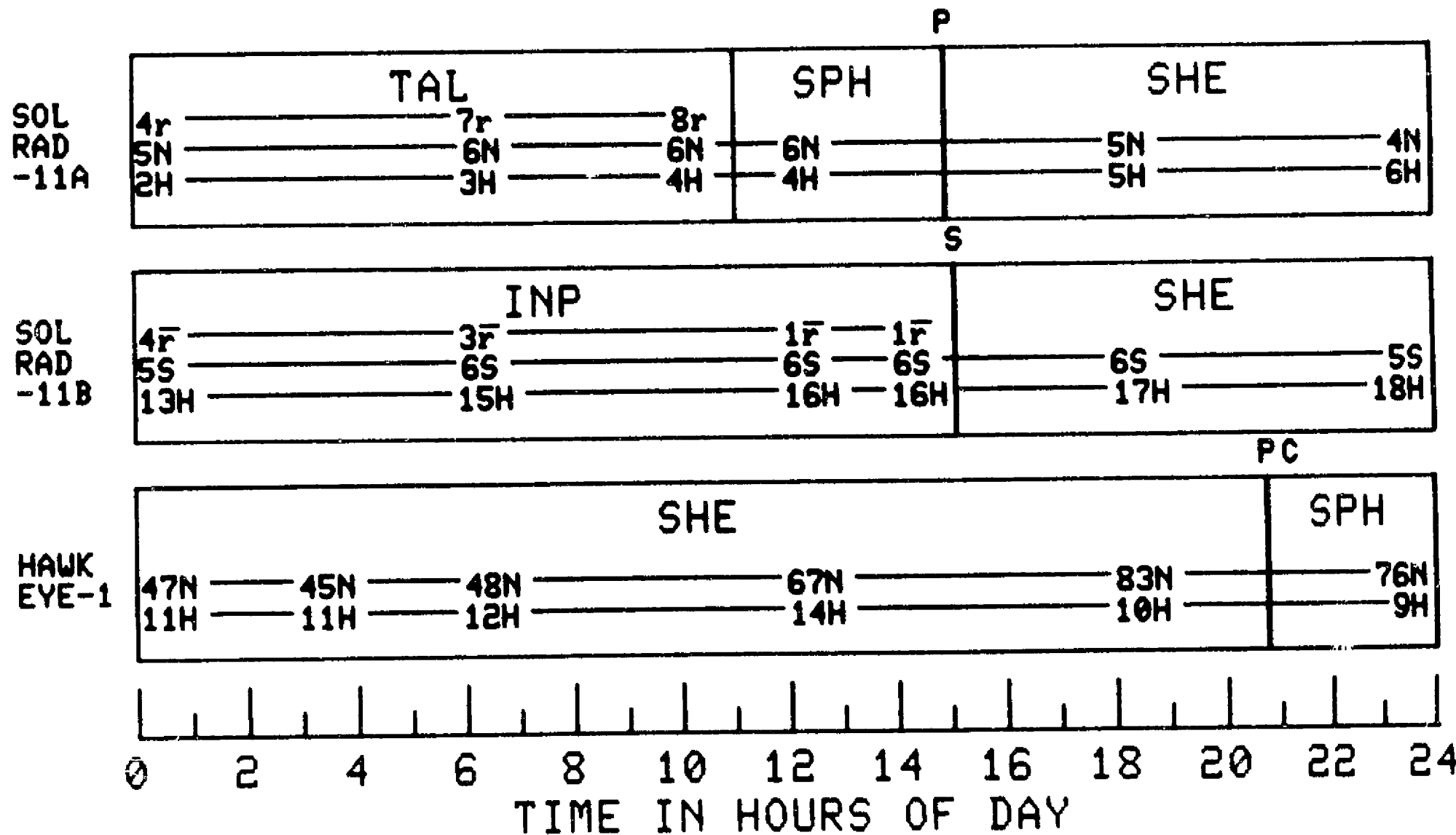
IMP-H



VELA
-5B

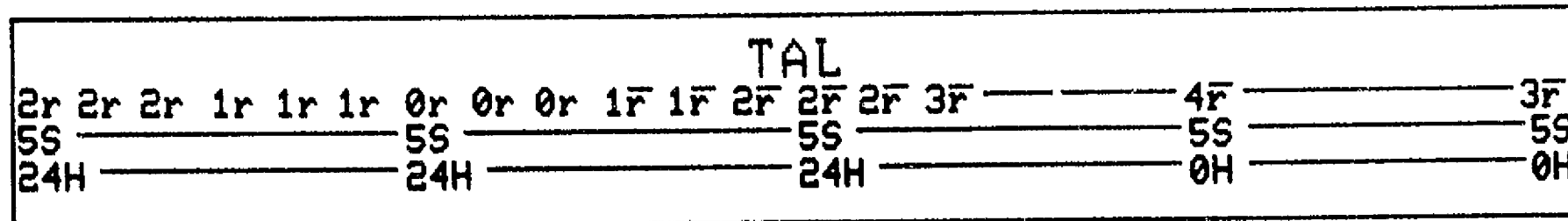


DAY 4 1977

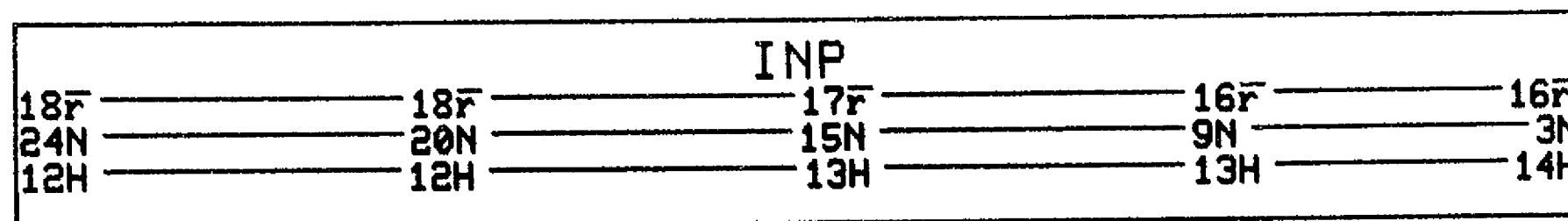


DAY 5 1977

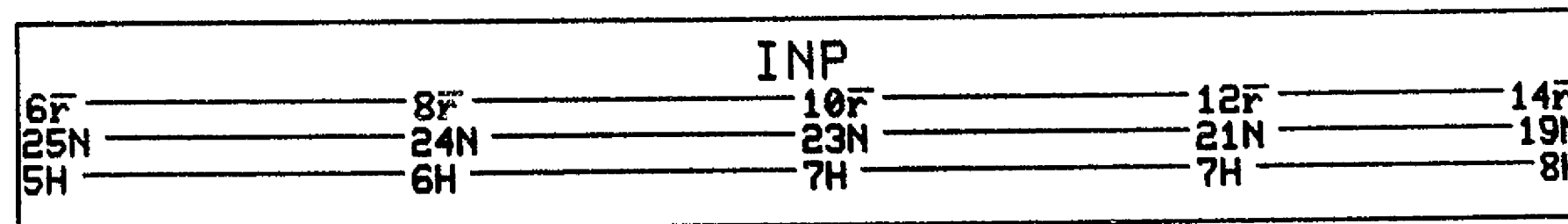
MOON



IMP-J

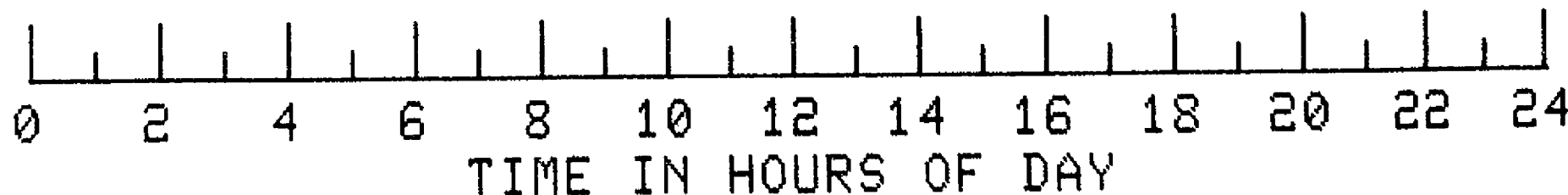
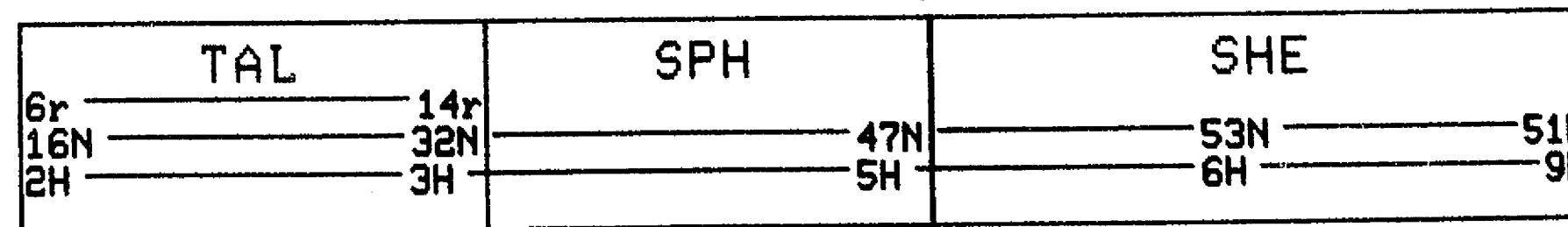


IMP-H

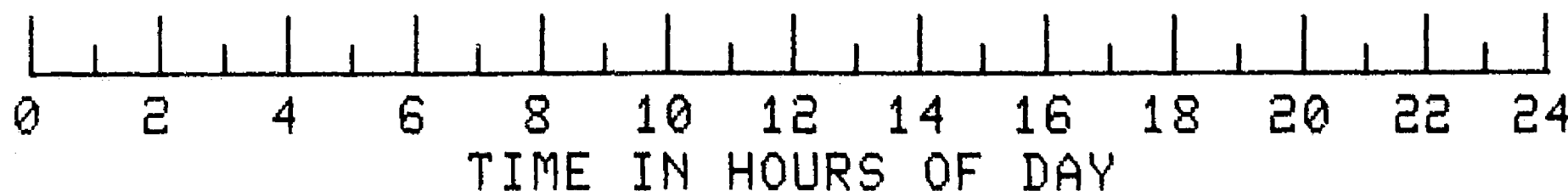
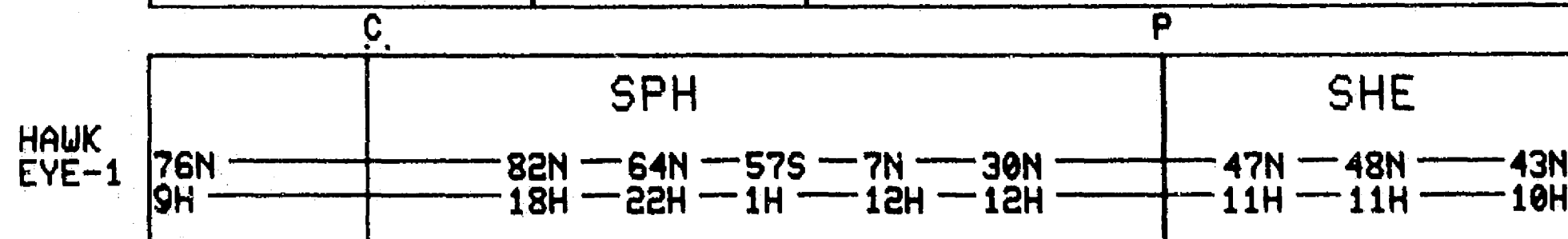
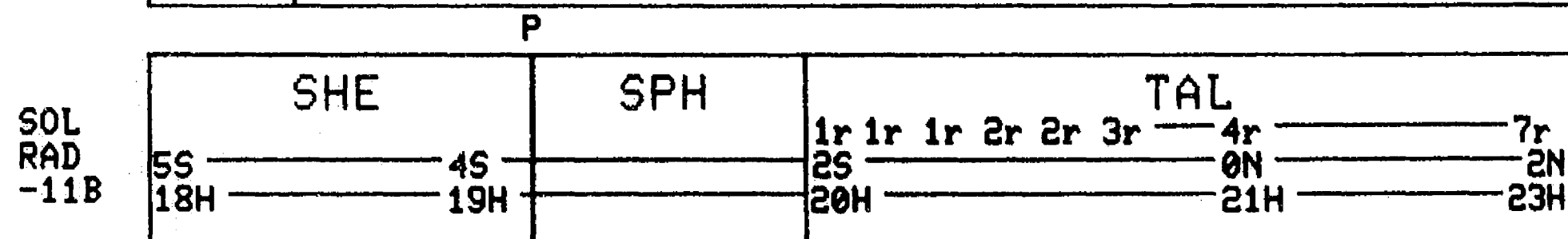
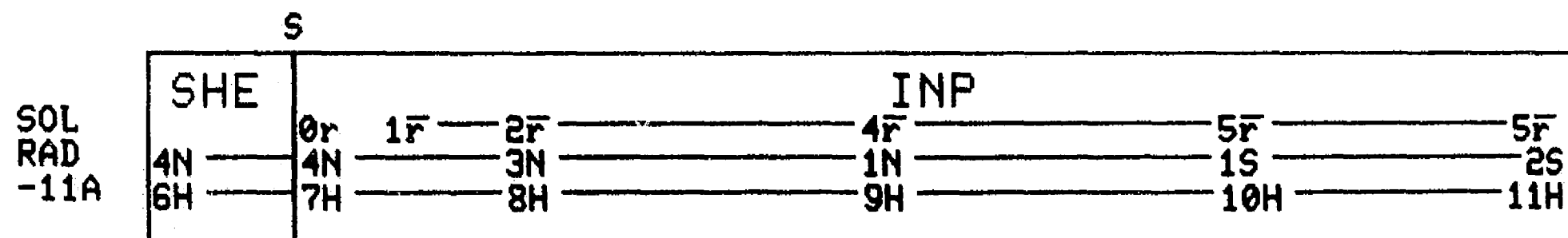


P

VELA
-5B

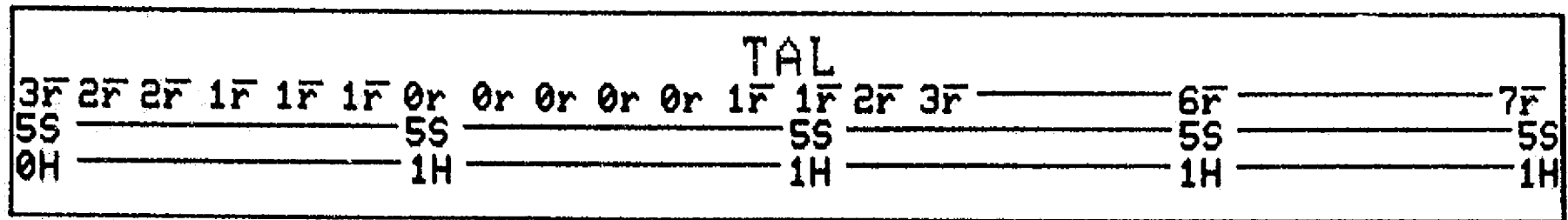


DAY 5 1977

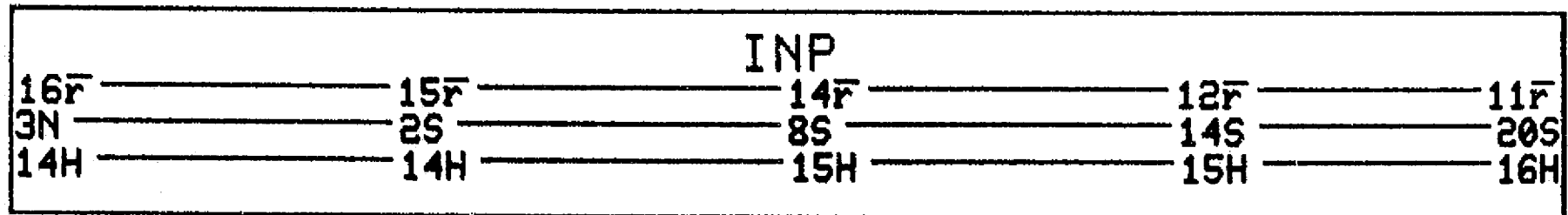


DAY 6 1977

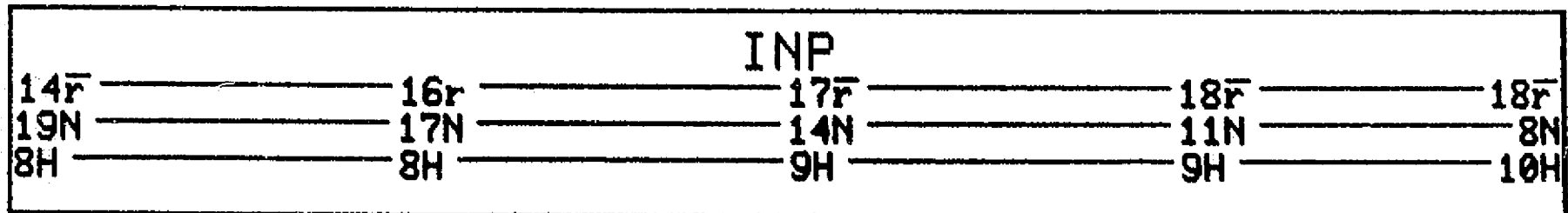
MOON



IMP-J

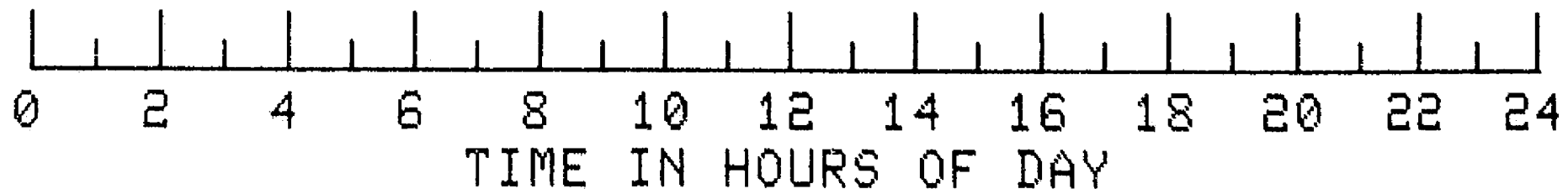
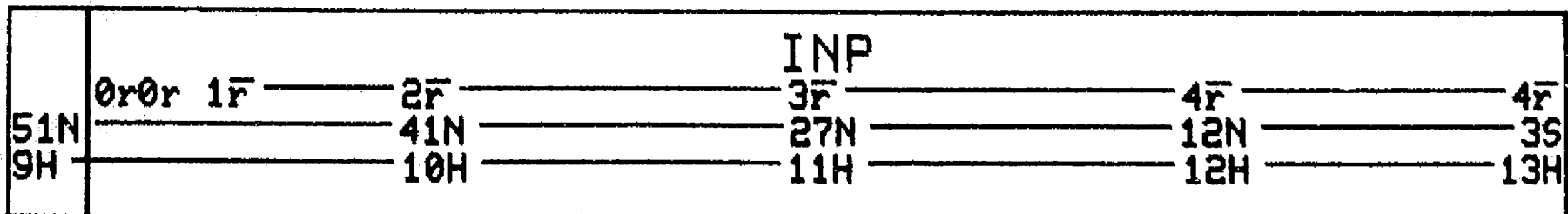


IMP-H



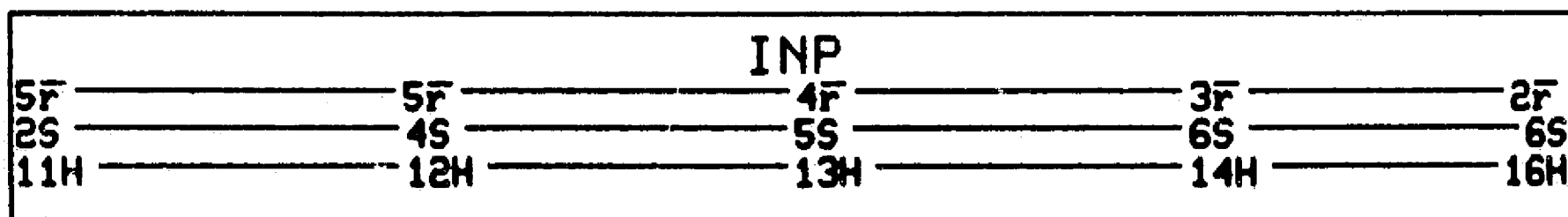
S

VELA
-5B

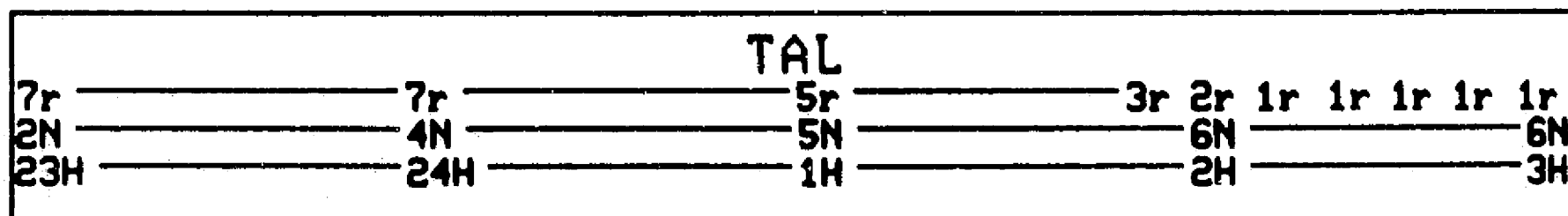


DAY 6 1977

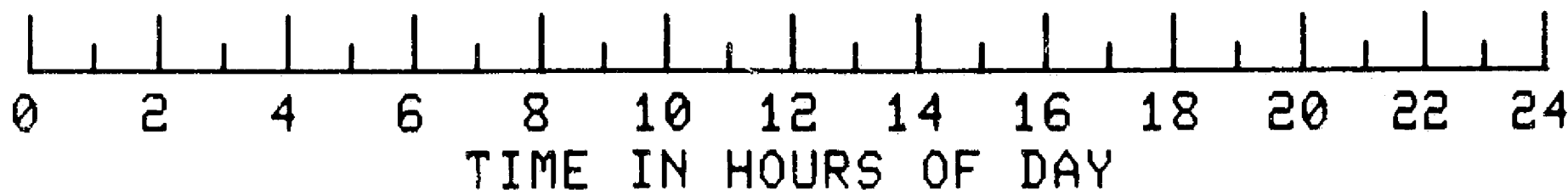
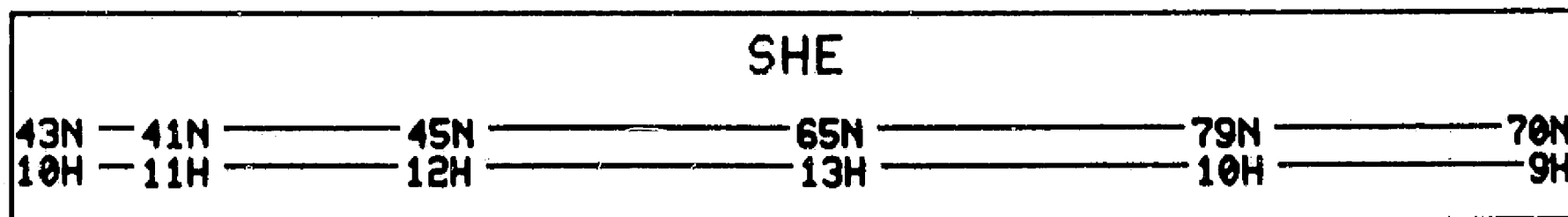
SOL
RAD
-11A



SOL
RAD
-11B



HAWK
EYE-1



DAY 7 1977

P

MOON

| TAL | | SHE | | | | | |
|-----|----|-----|----|----|----|----|----|
| 7r | 3r | | | | | | |
| 5S | 5S | 5S | 5S | 5S | 5S | 5S | 5S |
| 1H | 1H | 2H | 2H | 2H | 2H | 2H | 2H |

IMP-J

| | | INP | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 11r | 9r | 7r | 5r | 3r | 3r | 3r | 3r |
| 20S | 25S | 30S | 34S | 37S | 37S | 37S | 37S |
| 16H | 16H | 17H | 18H | 18H | 18H | 18H | 18H |

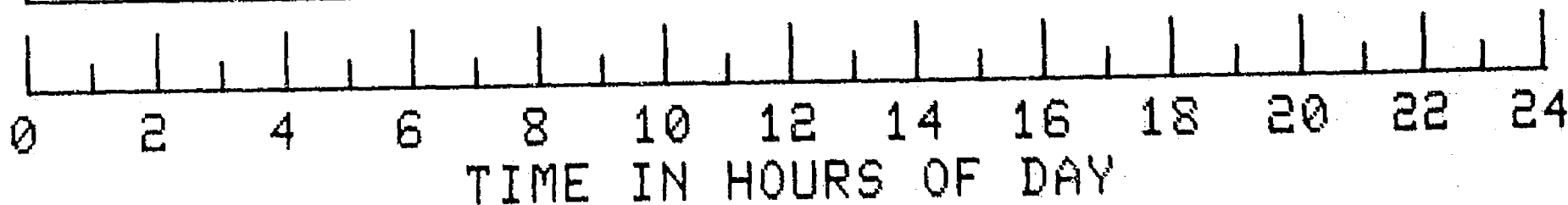
IMP-H

| | | INP | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 19r | 19r | 20r | 20r | 20r | 20r | 20r | 20r |
| 8N | 4N | 1N | 2S | 5S | 5S | 5S | 5S |
| 10H | 10H | 11H | 11H | 11H | 11H | 11H | 11H |

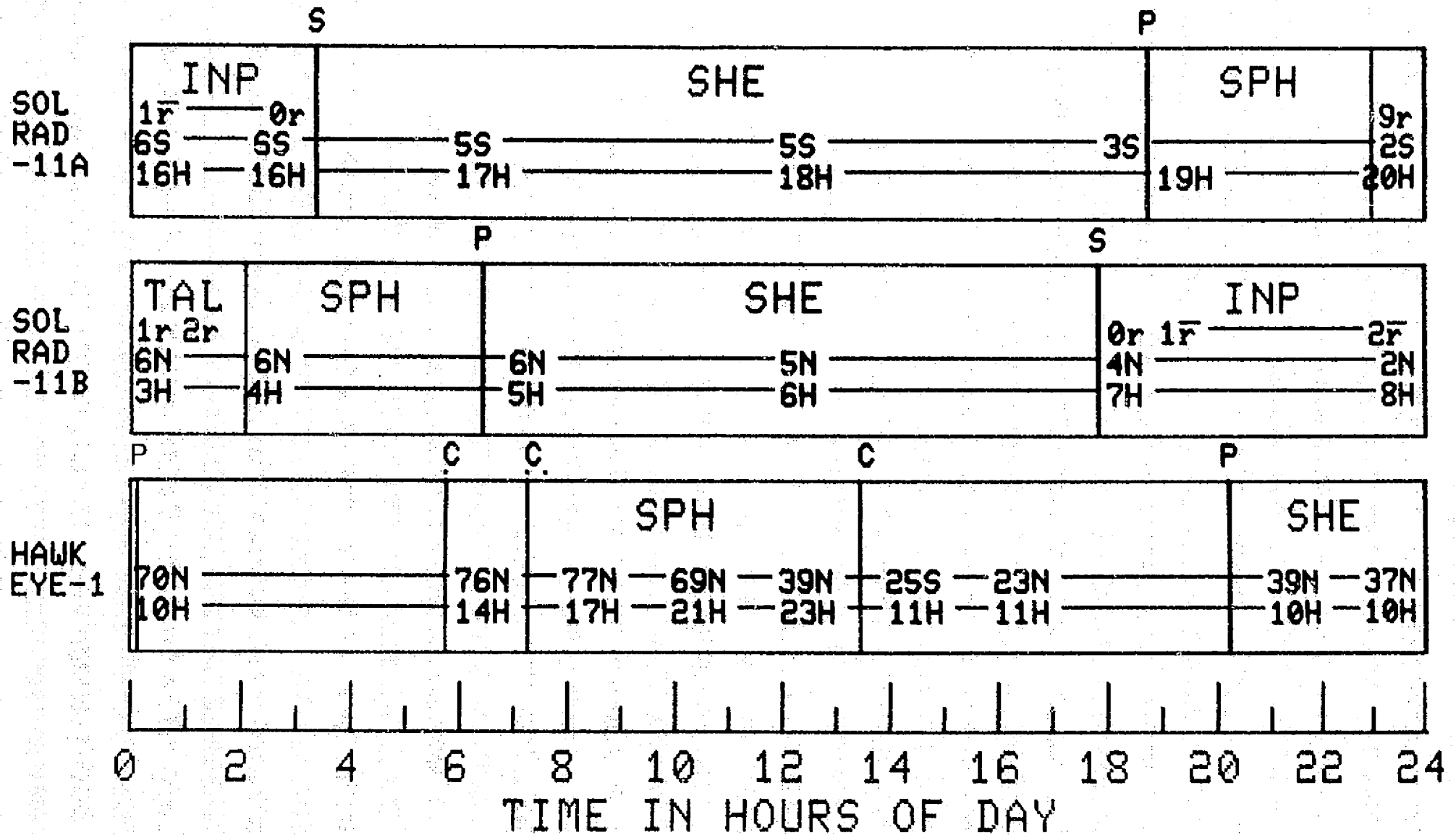
S

VELA
-5B

| INP | | | | SHE | |
|-----|-----|-----|-------|-----|-----|
| 4r | 4r | 2r | 1r 0r | | |
| 3S | 17S | 30S | 42S | | 51S |
| 13H | 14H | 15H | 16H | | 17H |

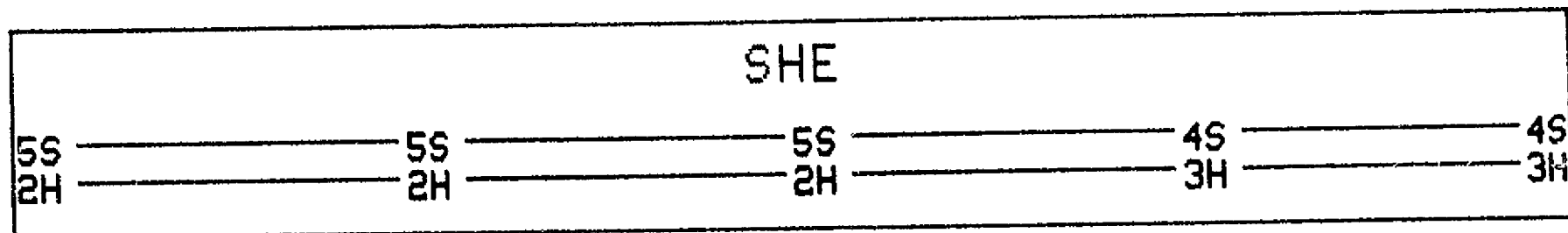


DAY 7 1977



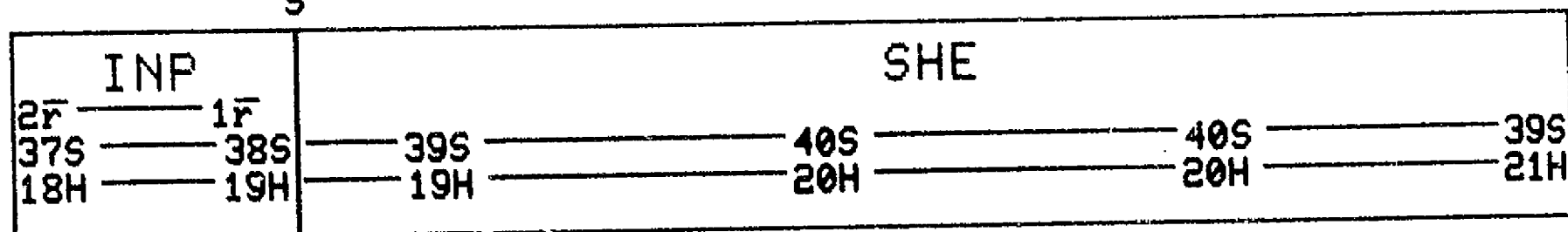
DAY 8 1977

MOON

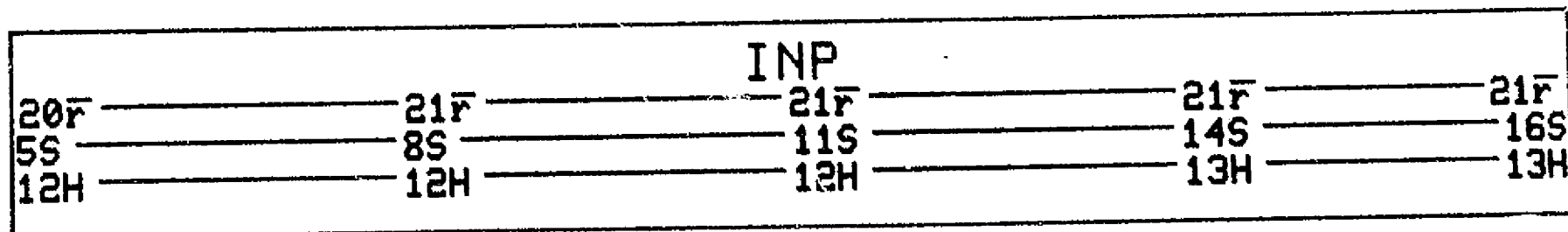


S

IMP-J

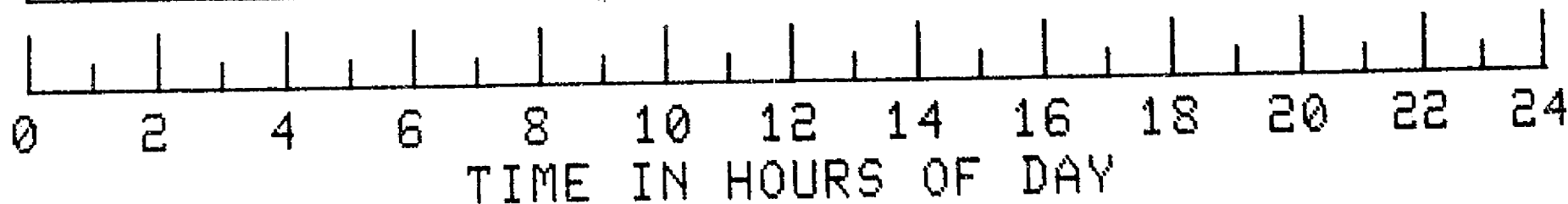
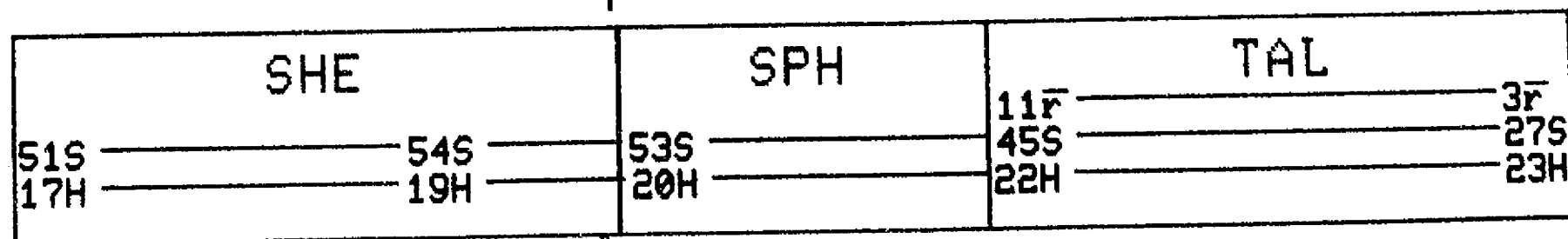


IMP-H



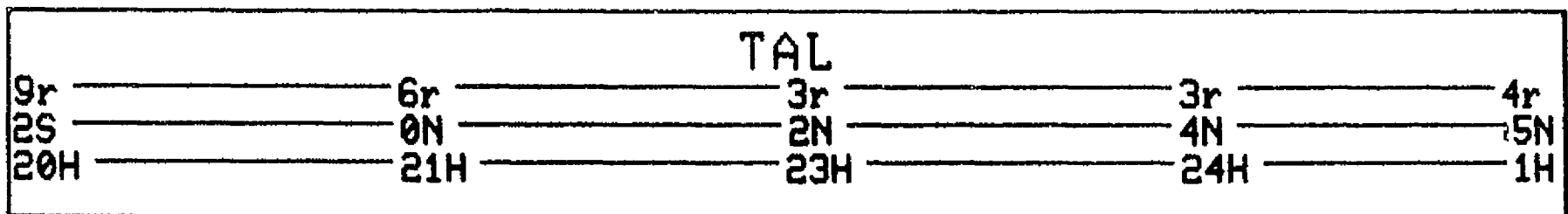
P

VELA
-5B

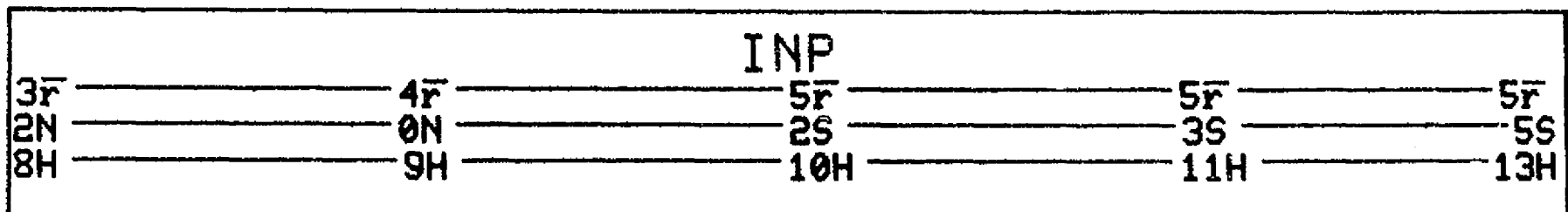


DAY 8 1977

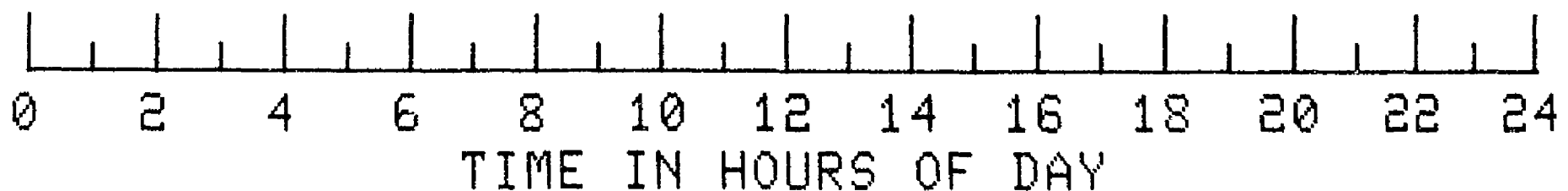
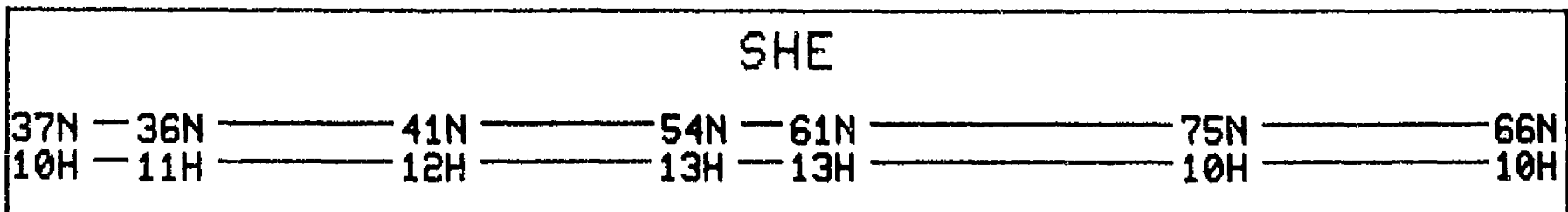
SOL
RAD
-11A



SOL
RAD
-11B



HAWK
EYE-1



DAY 9 1977

S

MOON

| SHE | | | | INP | | | |
|-----|--|----|--|-------|----|----|----|
| | | | | 0r 1r | 3r | | 5r |
| 4S | | 4S | | 4S | | 4S | 4S |
| 3H | | 3H | | 3H | | 3H | 4H |

P

IMP-J

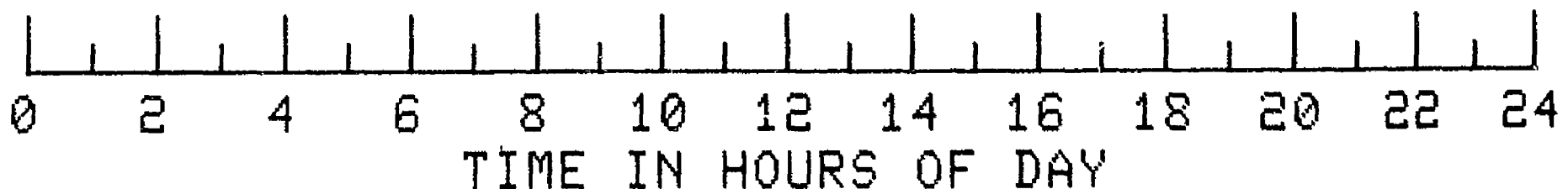
| SHE | | | | TAL | | | |
|-----|--|-----|--|-----|--|--|-----|
| | | | | 16r | | | 10r |
| 39S | | 37S | | 33S | | | 27S |
| 21H | | 22H | | 23H | | | 23H |

IMP-H

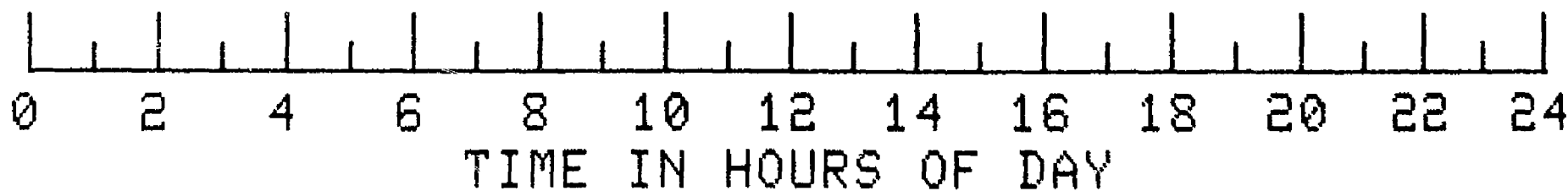
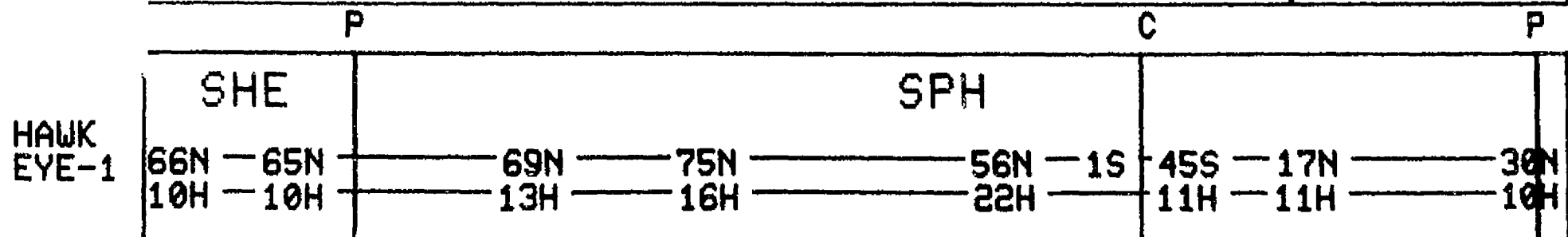
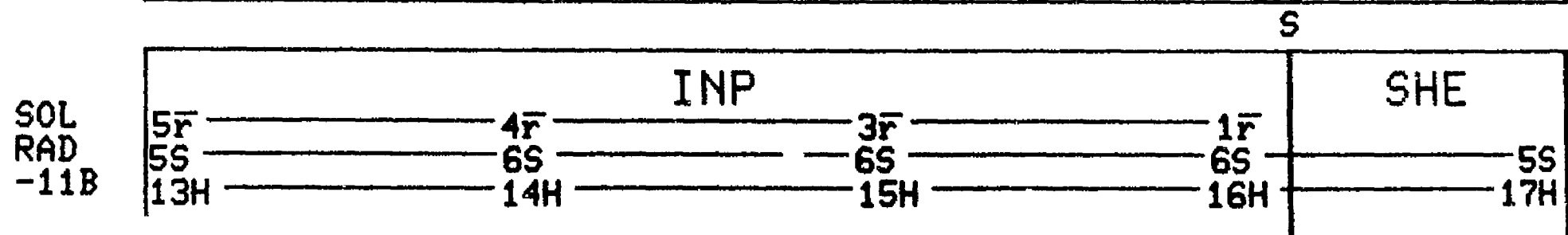
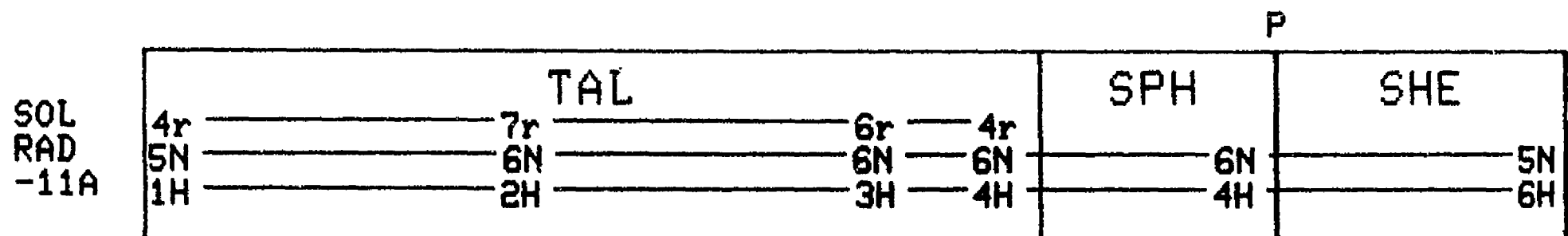
| | | | | INP | | | |
|-----|--|-----|--|-----|--|-----|-----|
| 20r | | 20r | | 20r | | 19r | 19r |
| 16S | | 18S | | 20S | | 22S | 23S |
| 13H | | 14H | | 14H | | 15H | 15H |

VELA
-5B

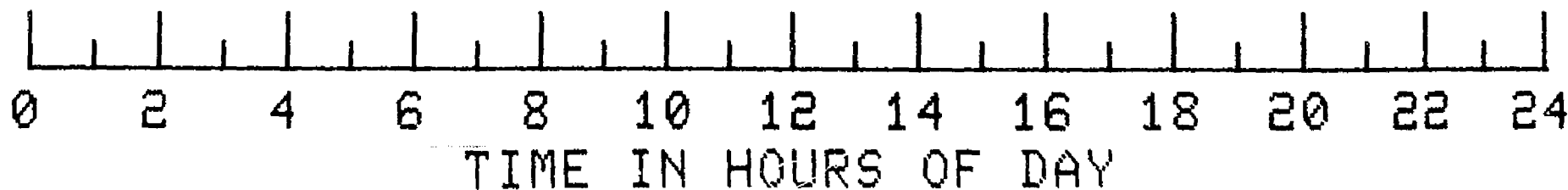
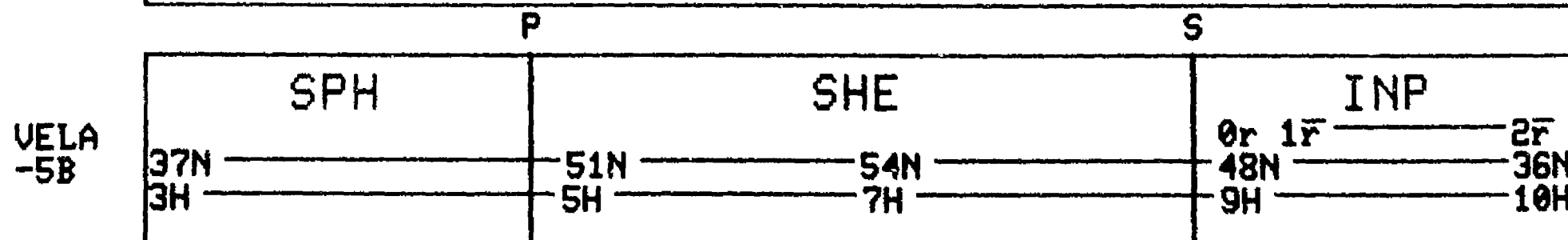
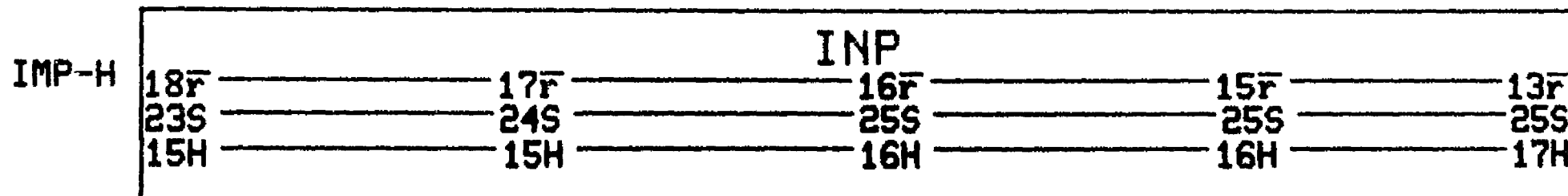
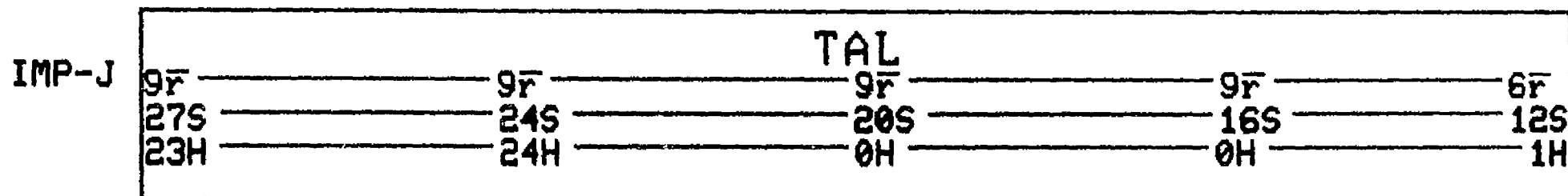
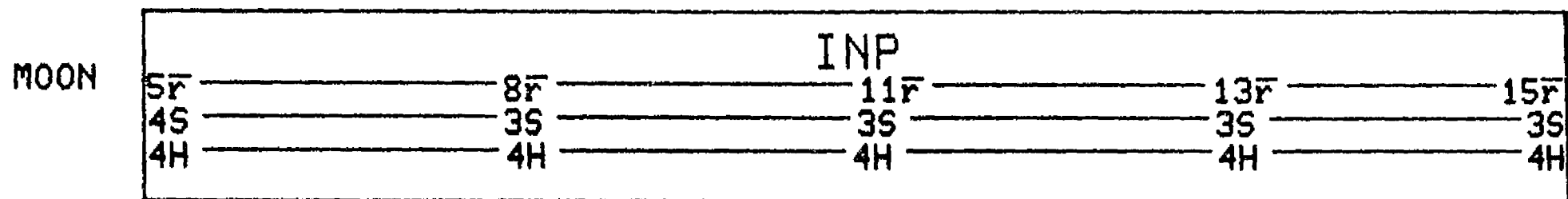
| | | | | | | | | TAL | | | |
|-----|----|----|----|----|----|-----|----|-----|--|-----|-----|
| 3r | 2r | 1r | 0r | 0r | 1r | 2r | 3r | 5r | | 7r | 9r |
| 27S | | | | | | 11S | | 5N | | 22N | 37N |
| 23H | | | | | | 0H | | 1H | | 2H | 3H |



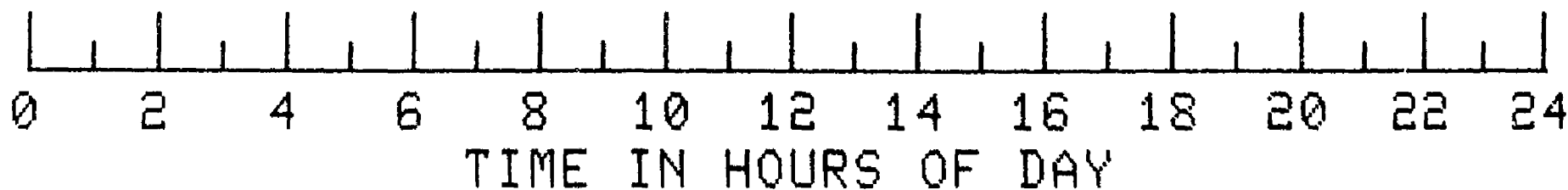
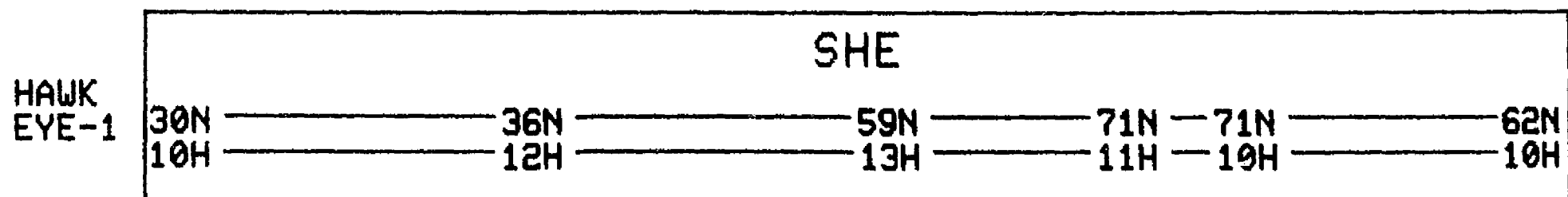
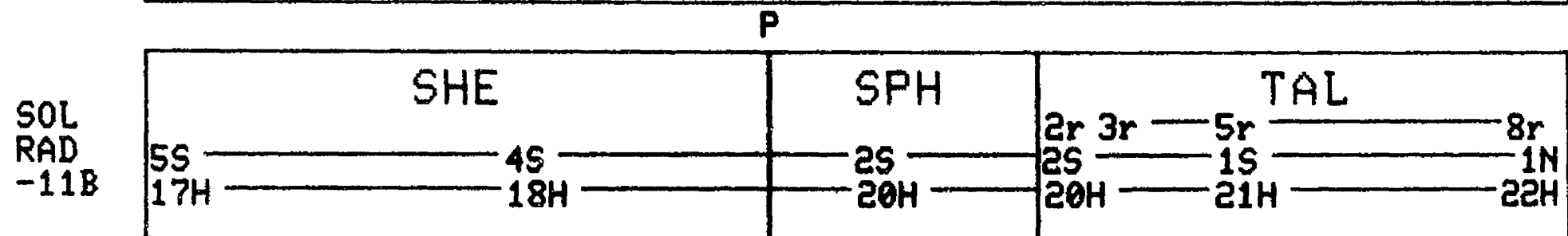
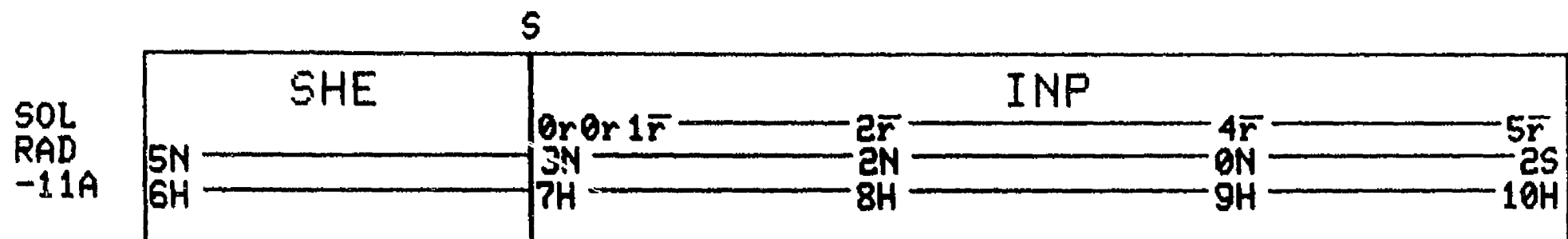
DAY 9 1977



DAY 10 1977

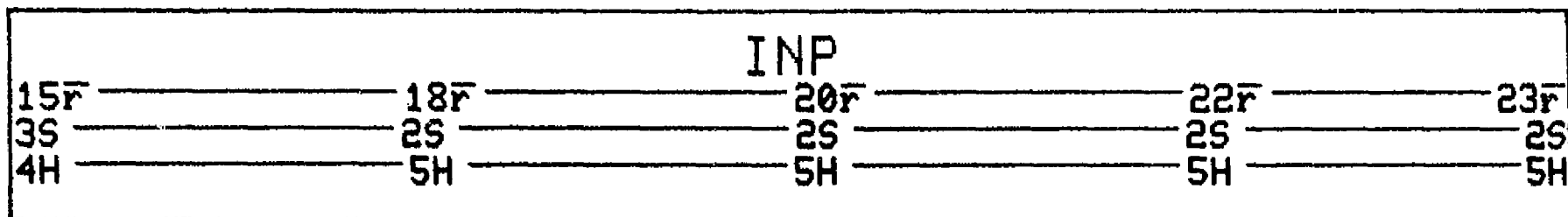


DAY 10 1977

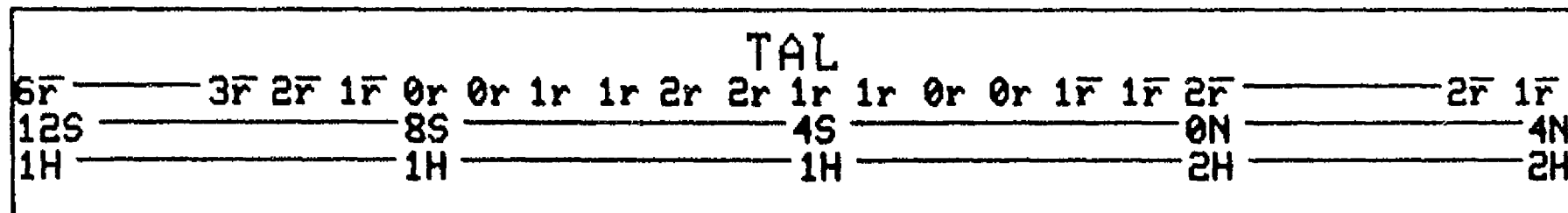


DAY 11 1977

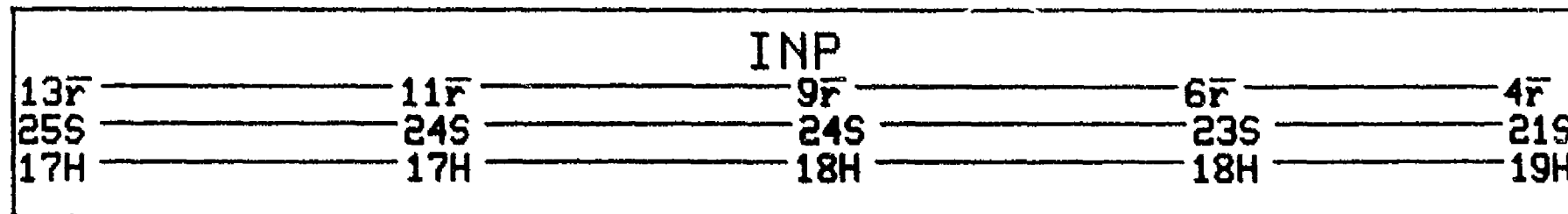
MOON



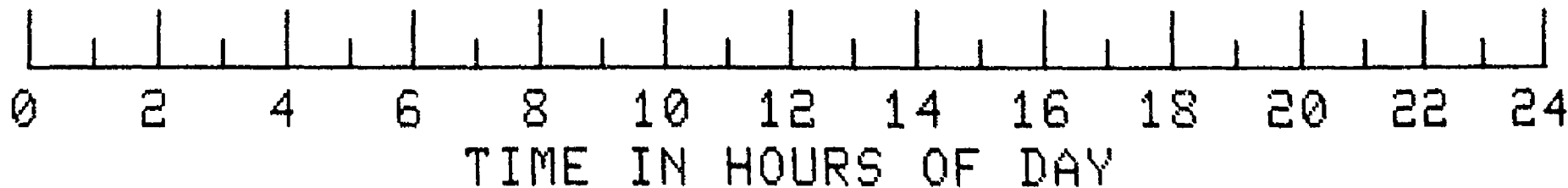
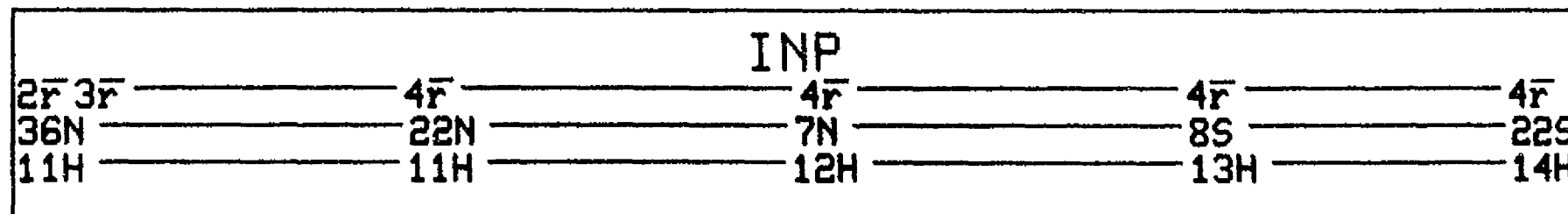
IMP-J



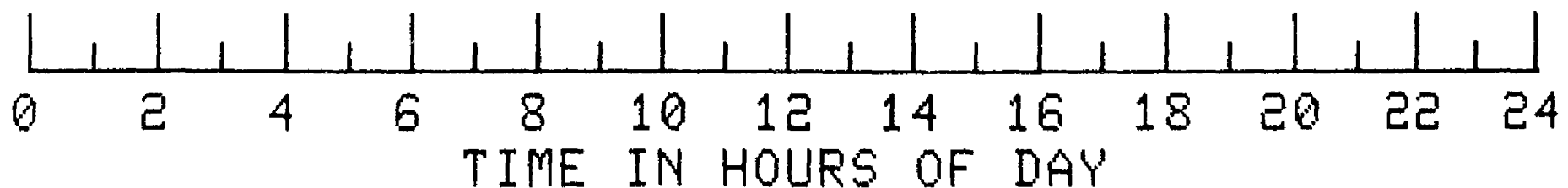
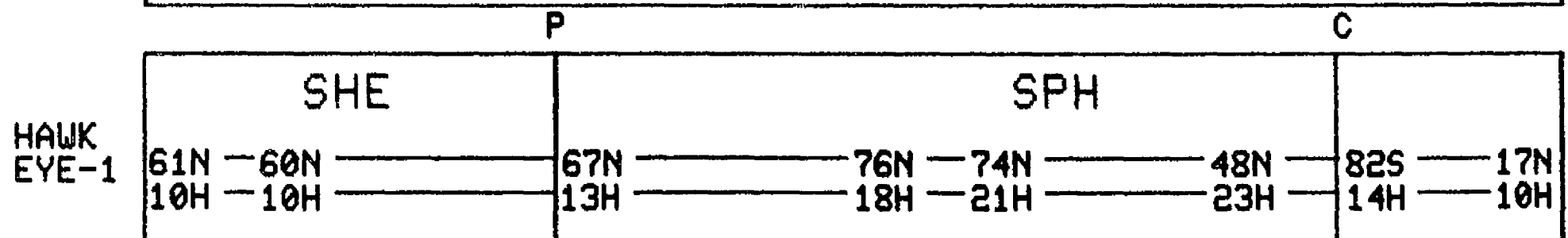
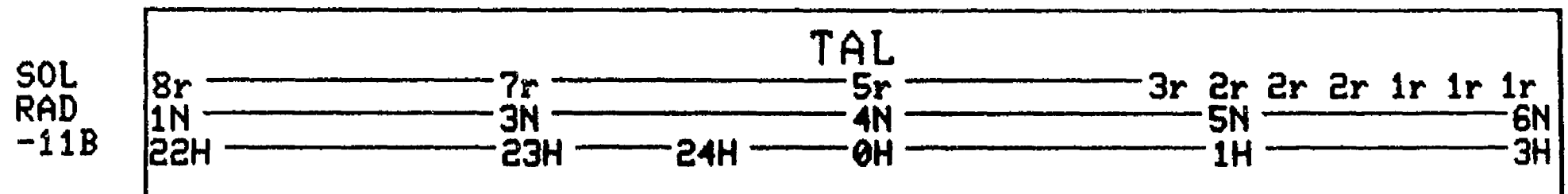
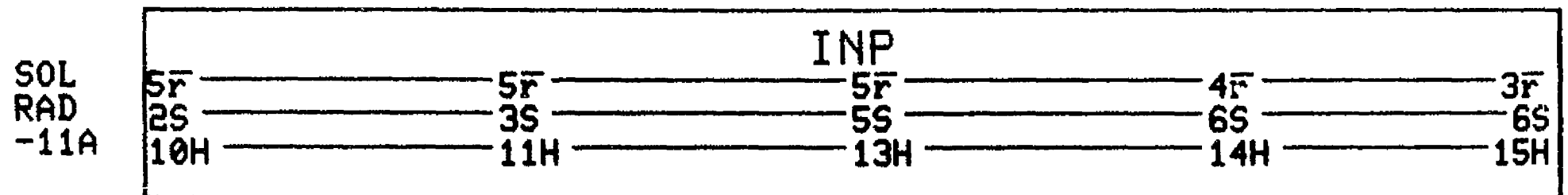
IMP-H



VELA
-5B

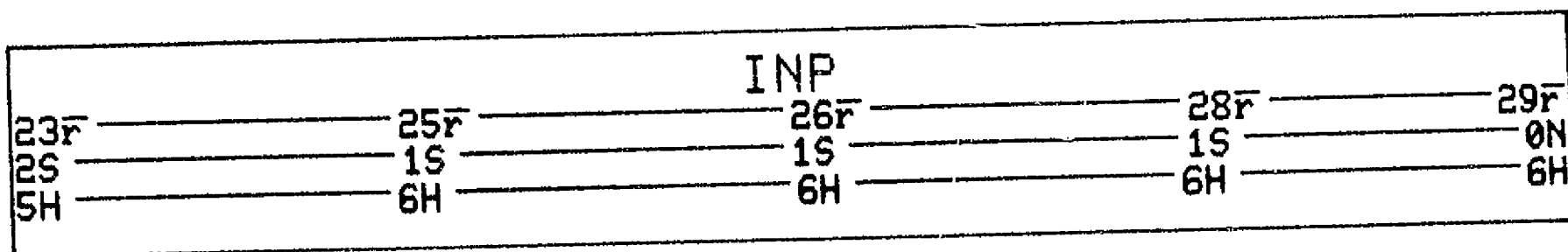


DAY 11 1977



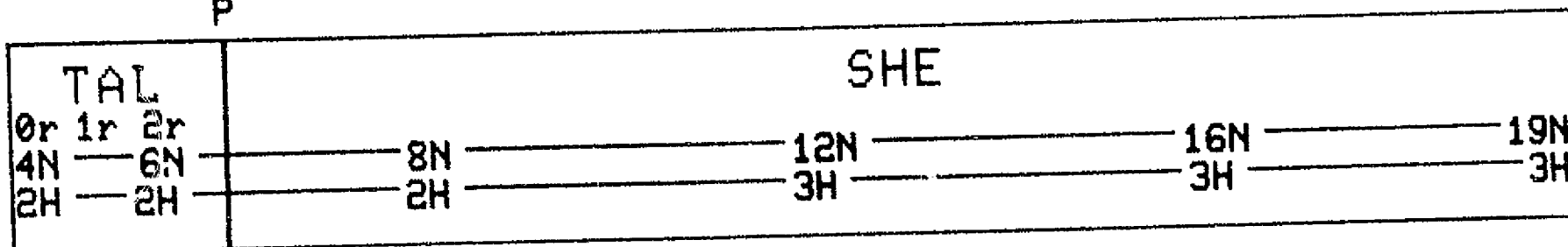
DAY 12 1977

MOON



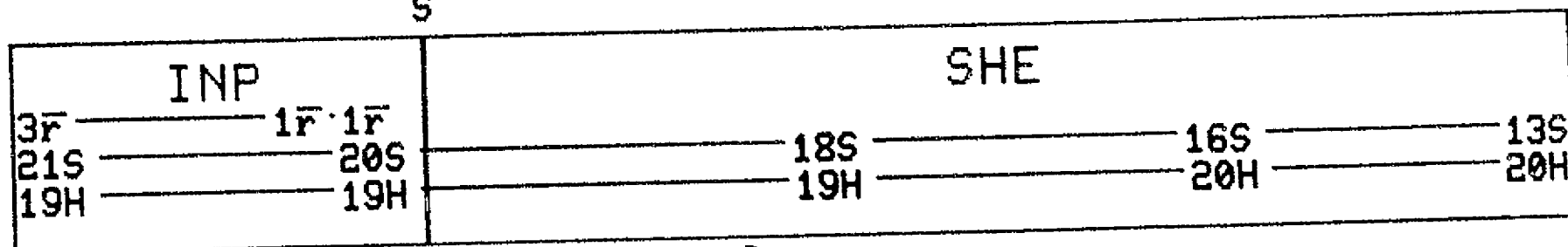
P

IMP-J



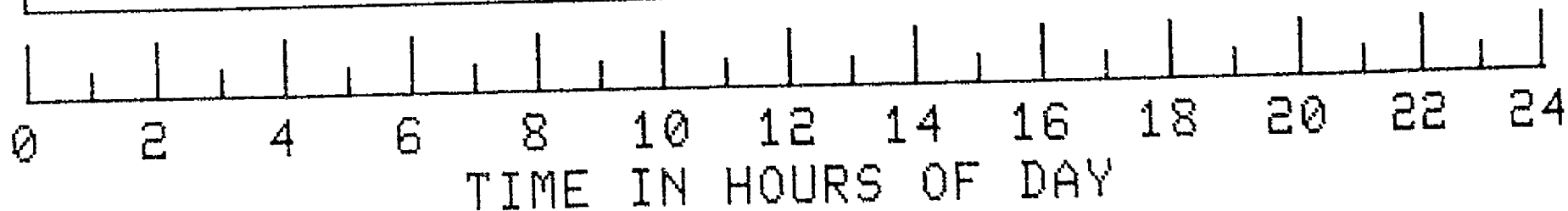
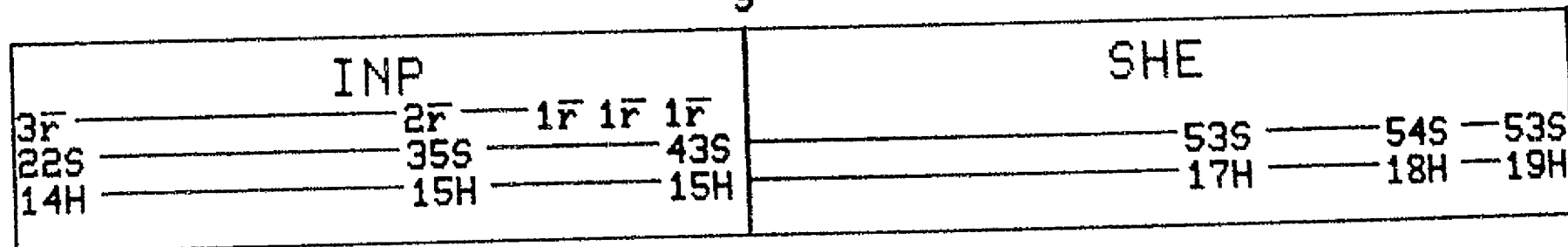
S

IMP-H

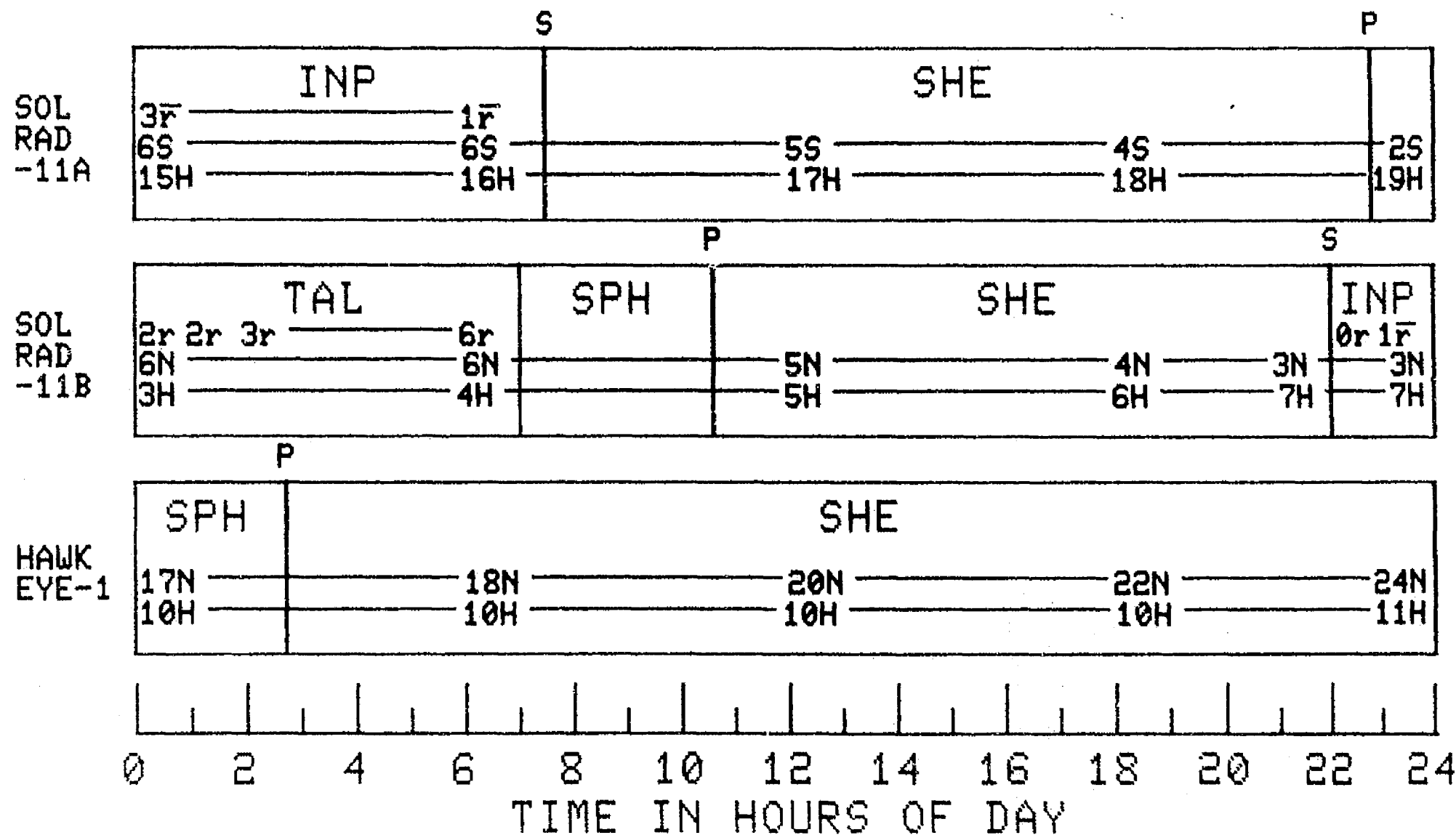


S

VELA
-5B

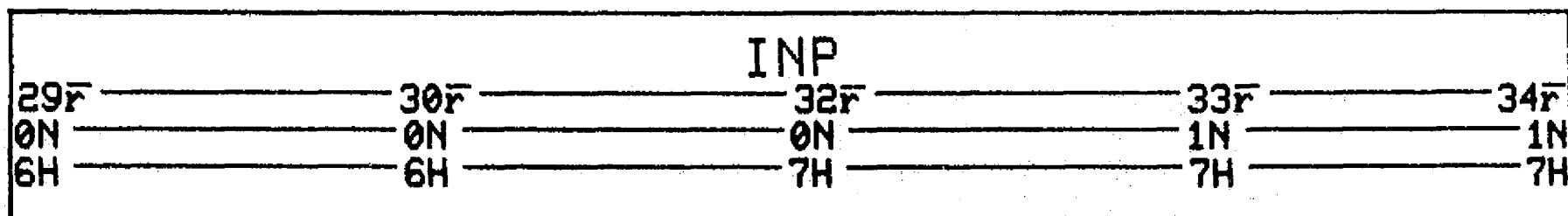


DAY 12 1977



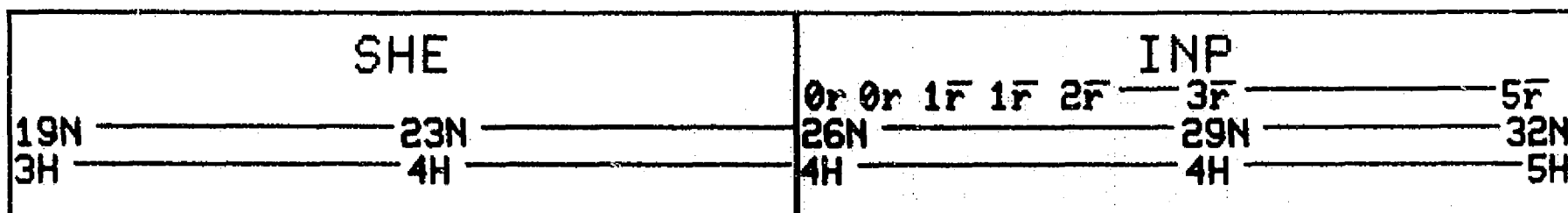
DAY 13 1977

MOON



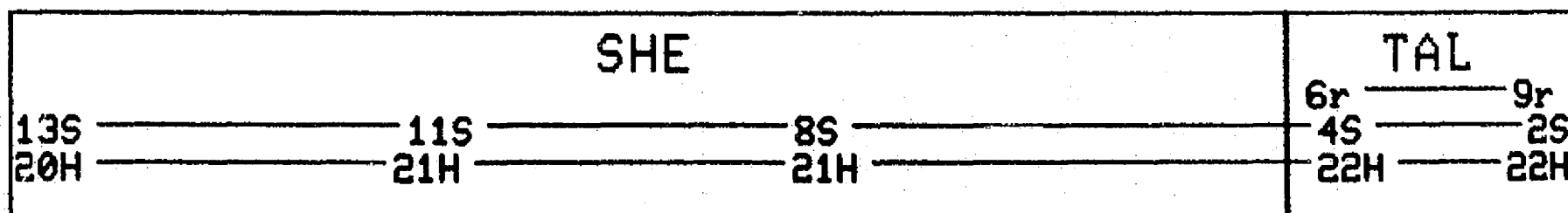
S

IMP-J



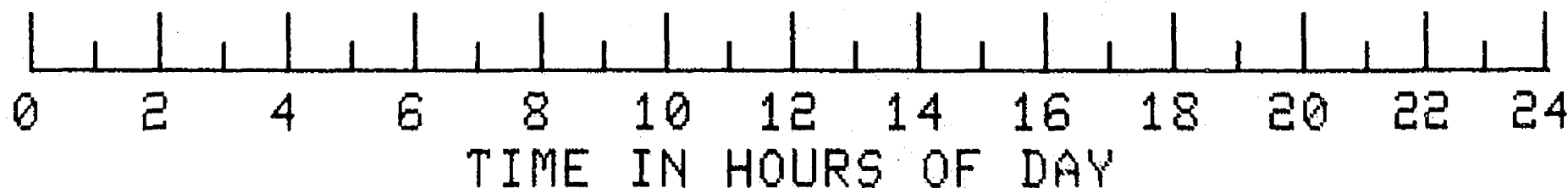
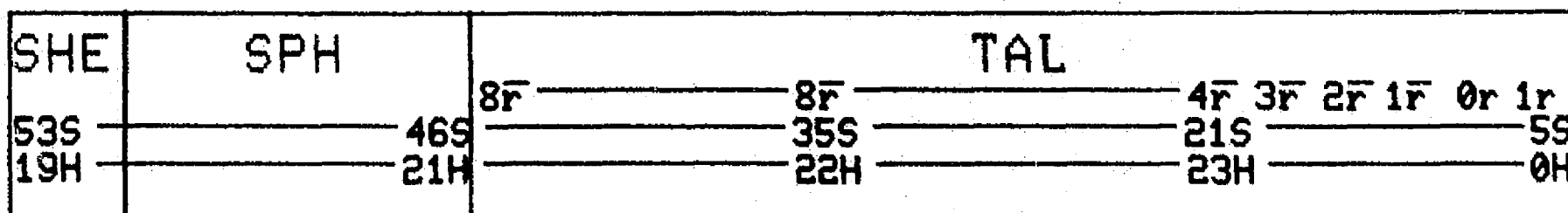
P

IMP-H

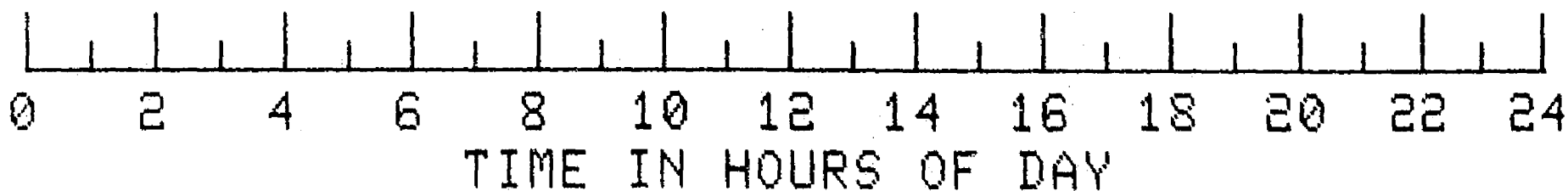
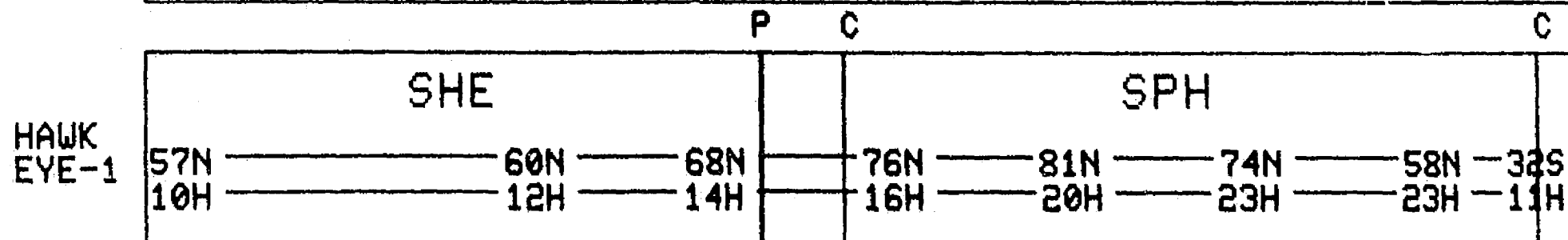
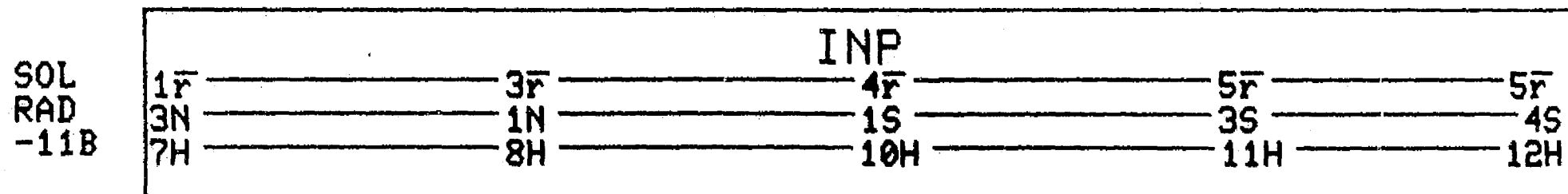
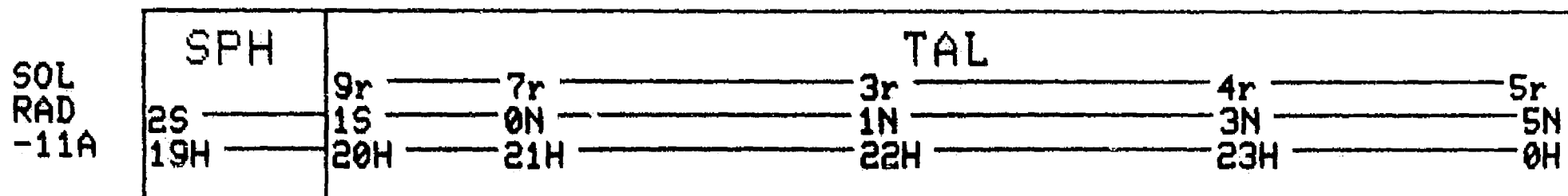


P

VELA
-5B

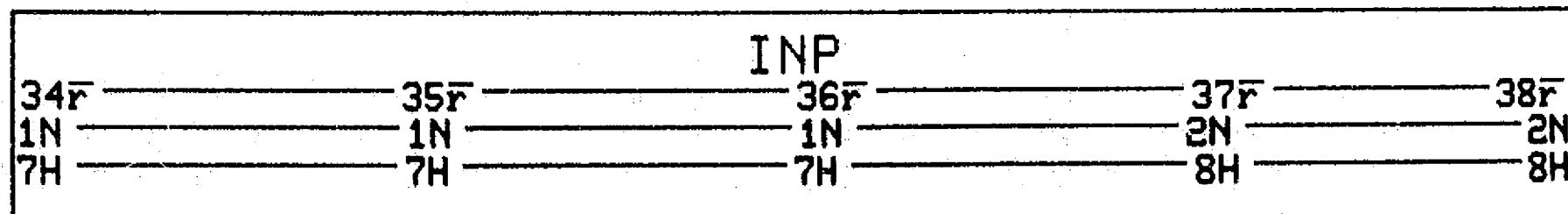


DAY 13 1977

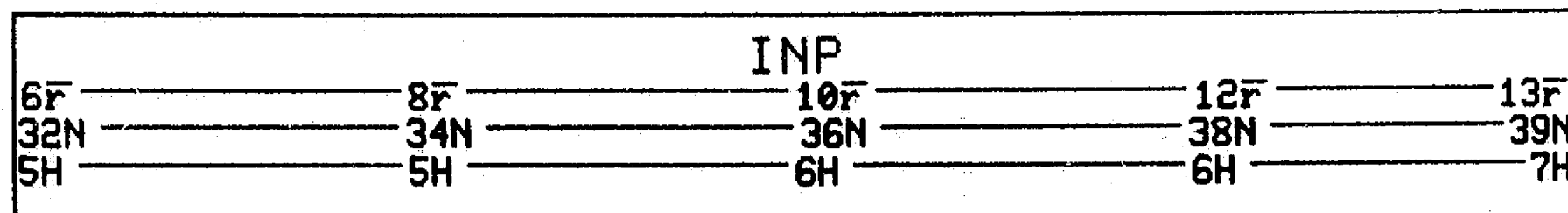


DAY 14 1977

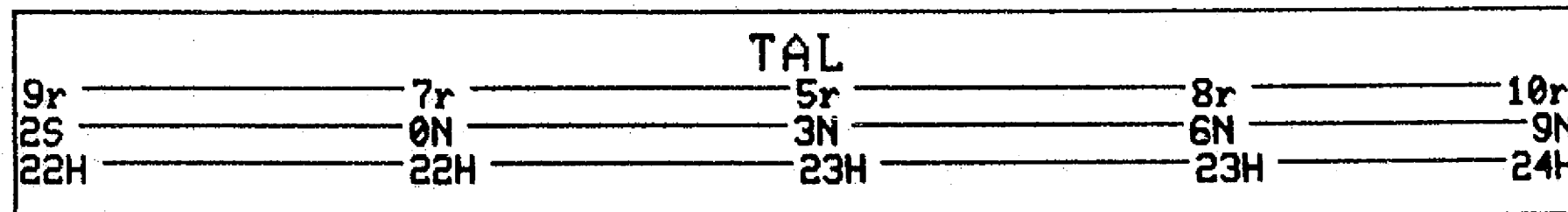
MOON



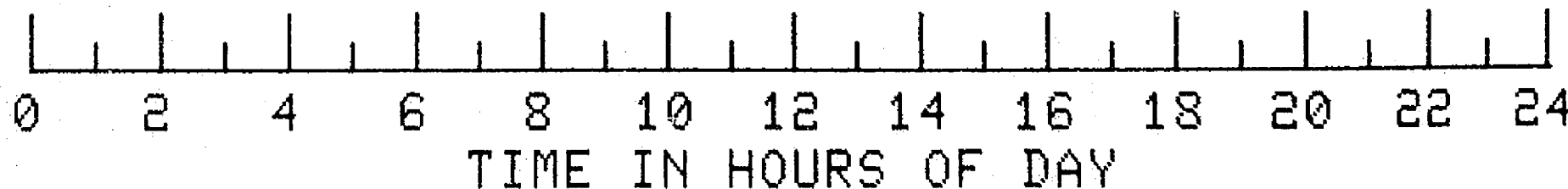
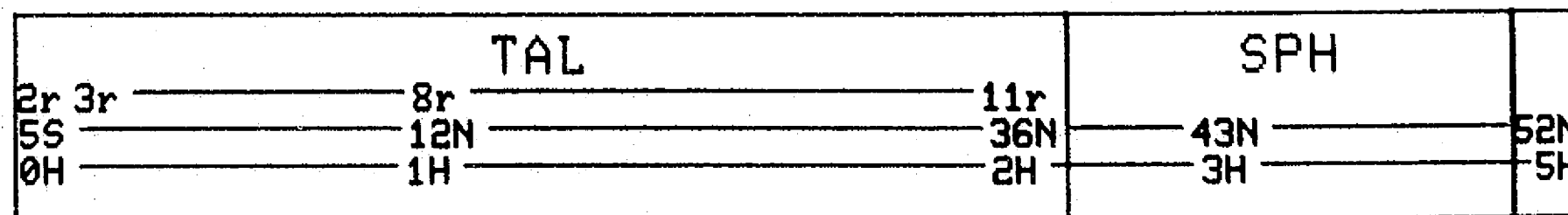
IMP-J



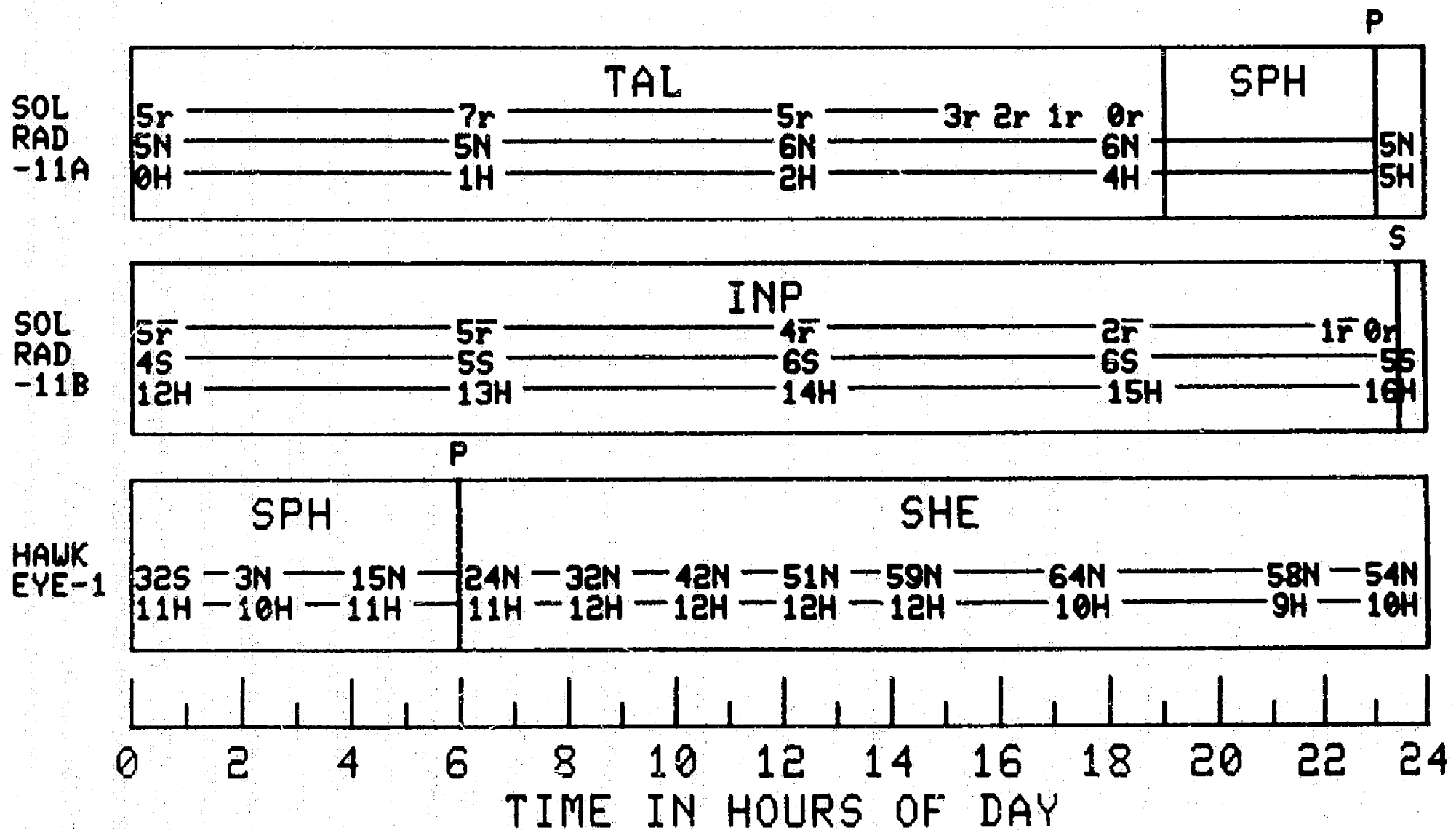
IMP-H



VELA
-5B

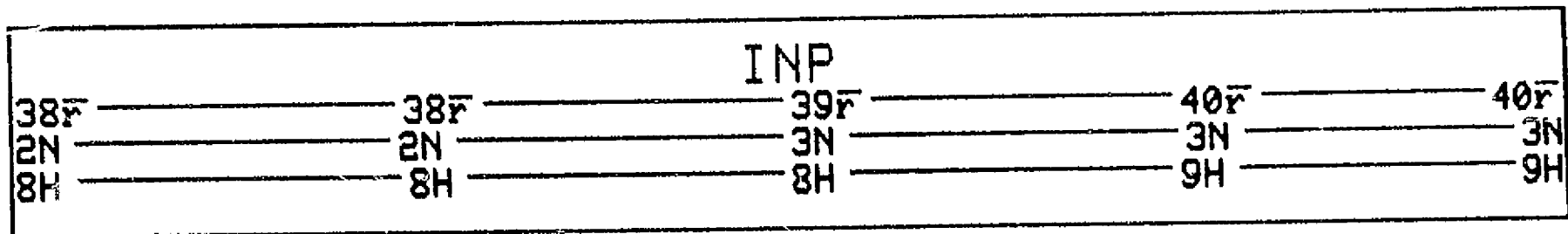


DAY 14 1977

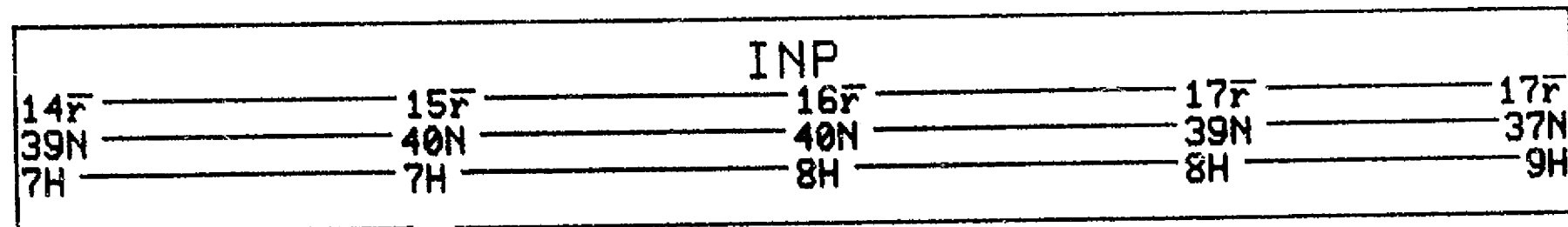


DAY 15 1977

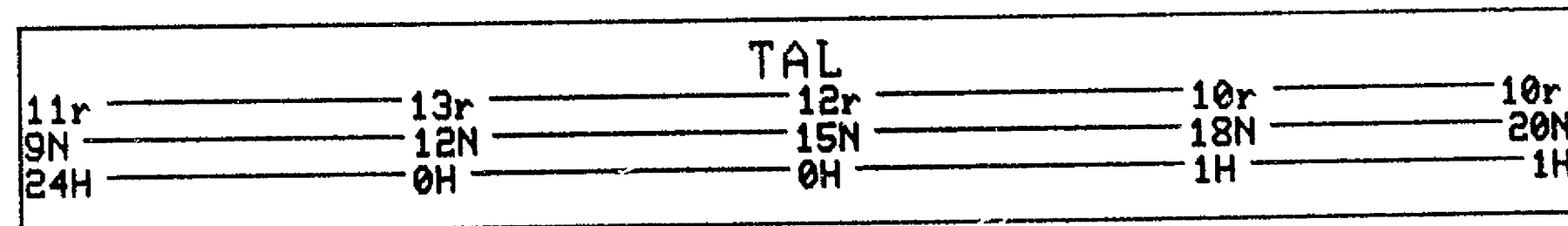
MOON



IMP-J

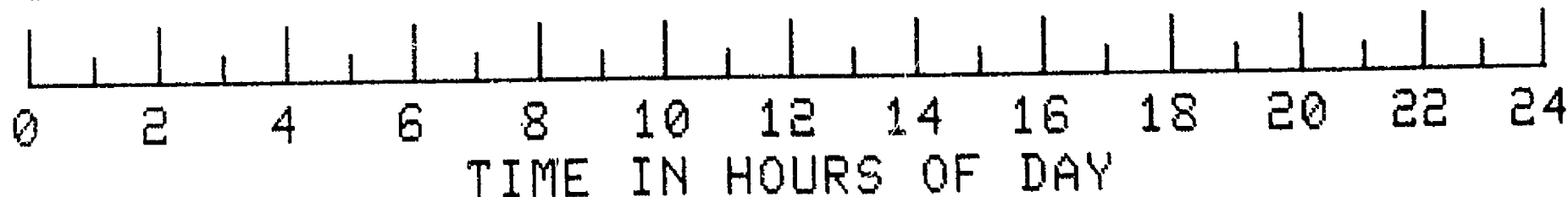
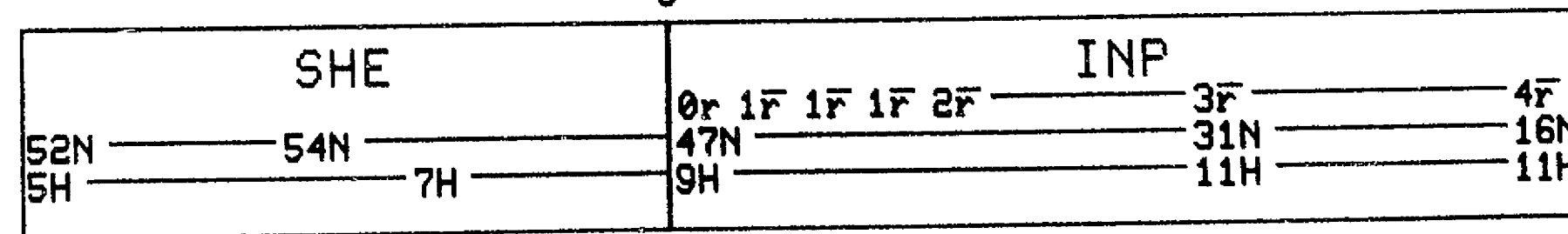


IMP-H

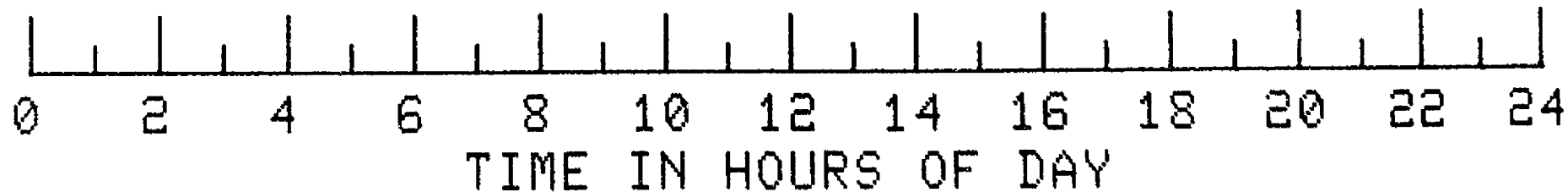
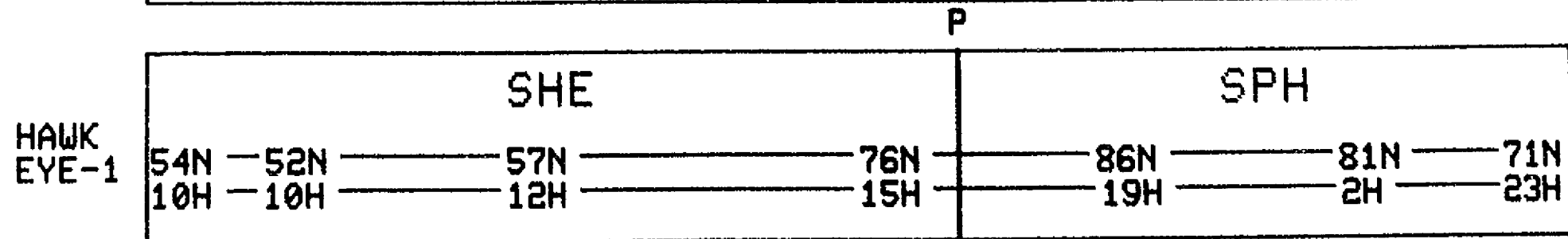
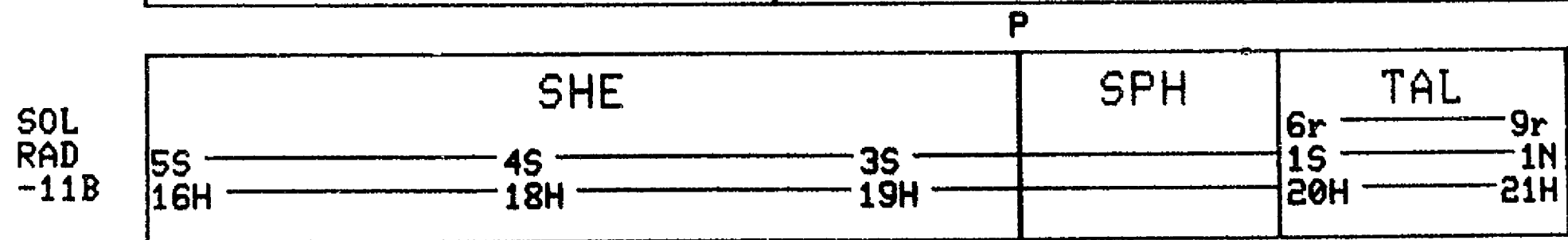
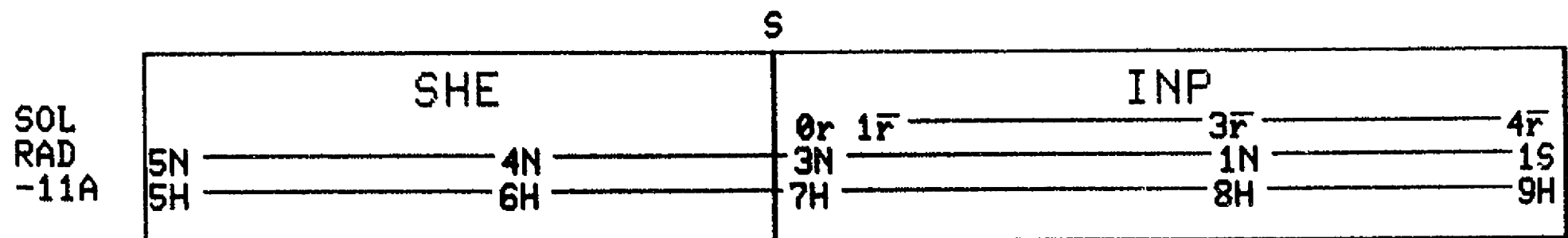


S

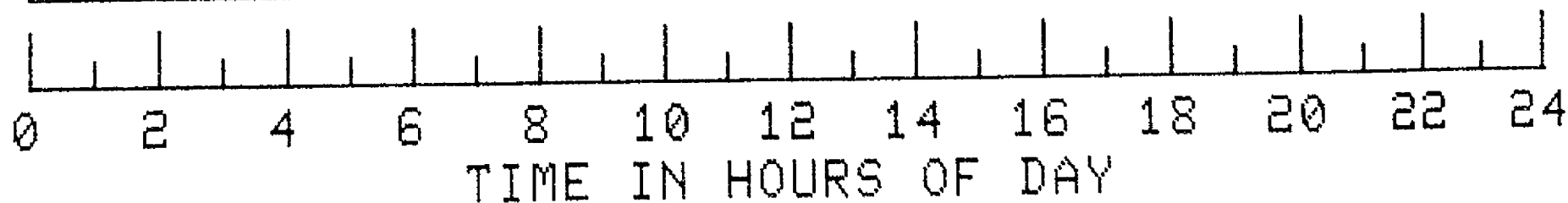
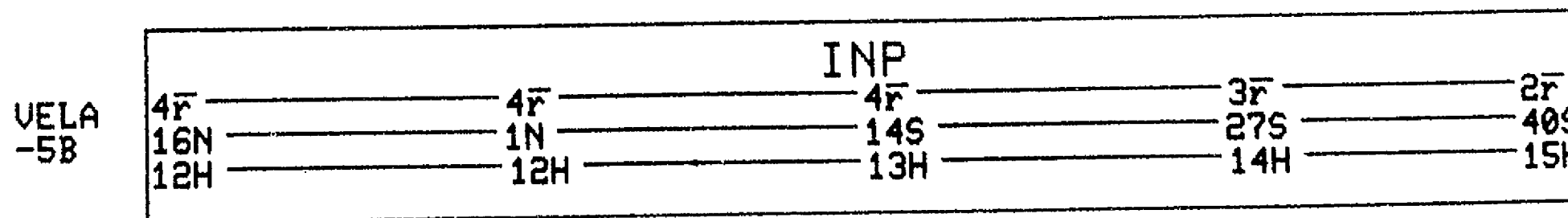
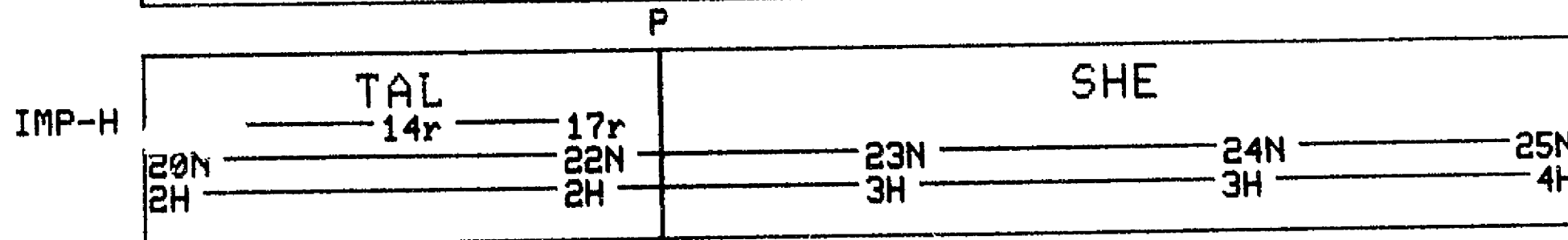
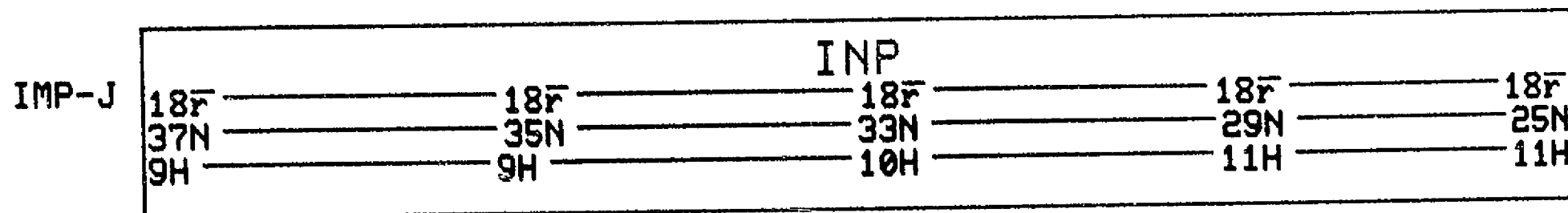
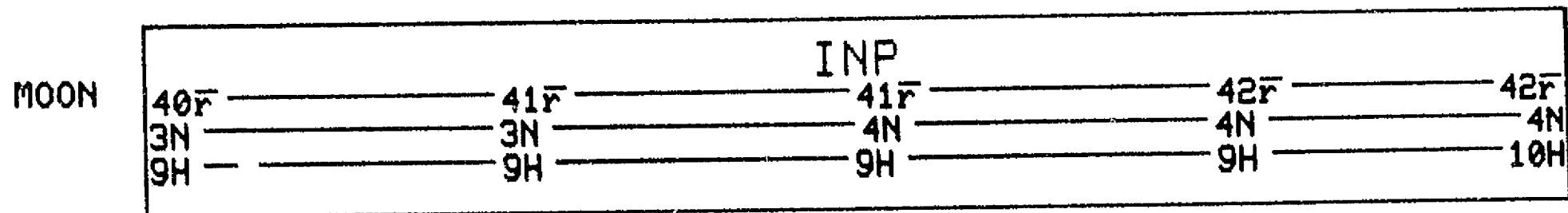
VELA
-5B



DAY 15 1977

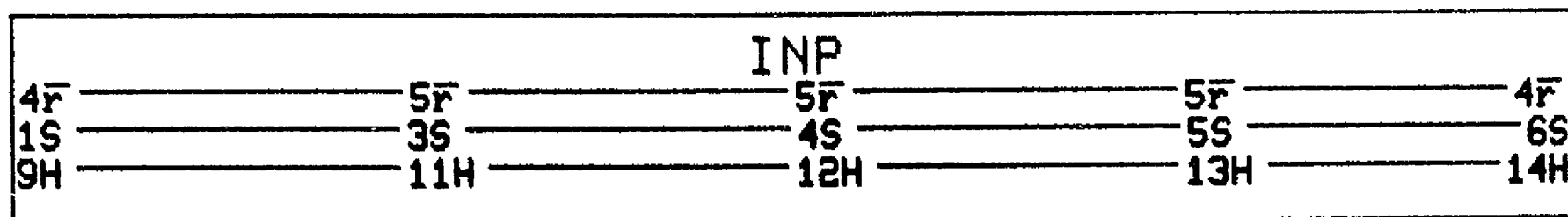


DAY 16 1977

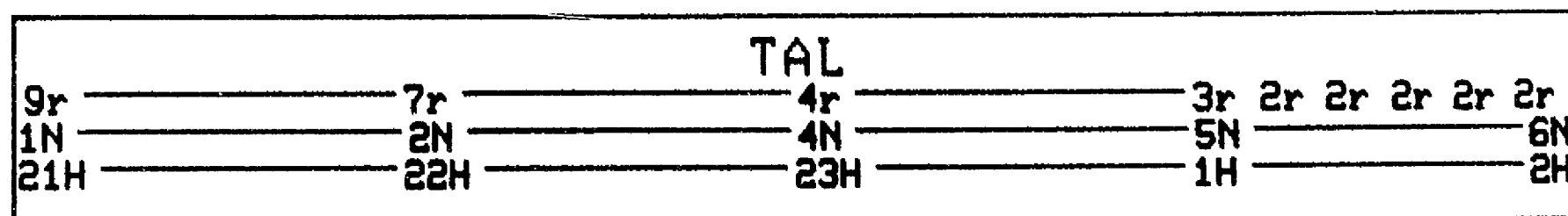


DAY 16 1977

SOL
RAD
-11A



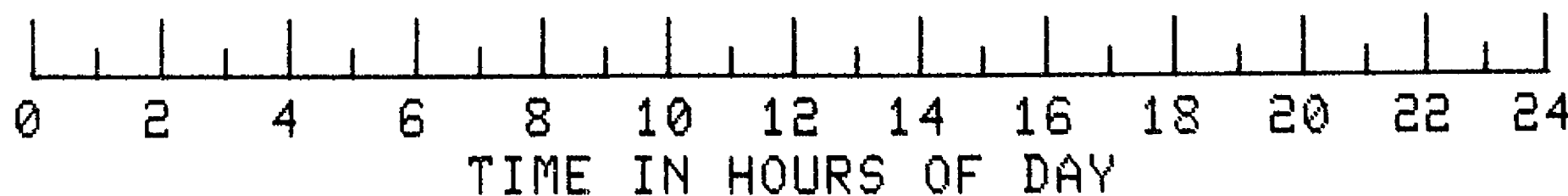
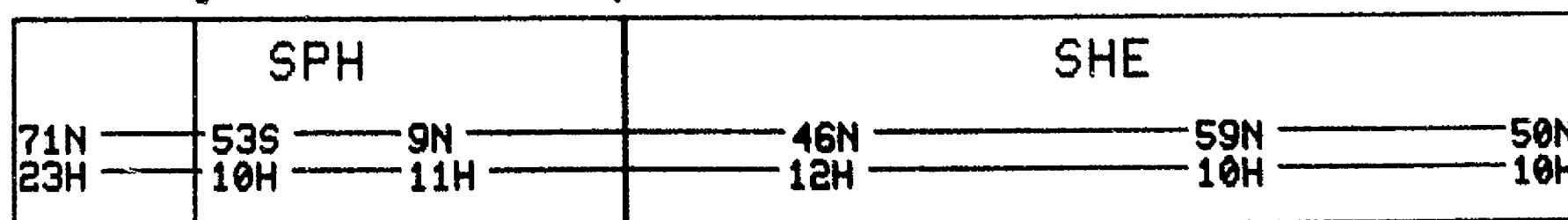
SOL
RAD
-11B



C

P

HAWK
EYE-1



DAY 17 1977

MOON

| INP | | | | |
|-----|-----|-----|-----|-----|
| 42r | 42r | 42r | 43r | 43r |
| 4N | 4N | 4N | 4N | 5N |
| 10H | 10H | 10H | 10H | 11H |

IMP-J

| INP | | | | |
|-----|-----|-----|-----|-----|
| 18r | 18r | 18r | 18r | 17r |
| 25N | 21N | 16N | 10N | 5N |
| 11H | 12H | 12H | 12H | 13H |

S

IMP-H

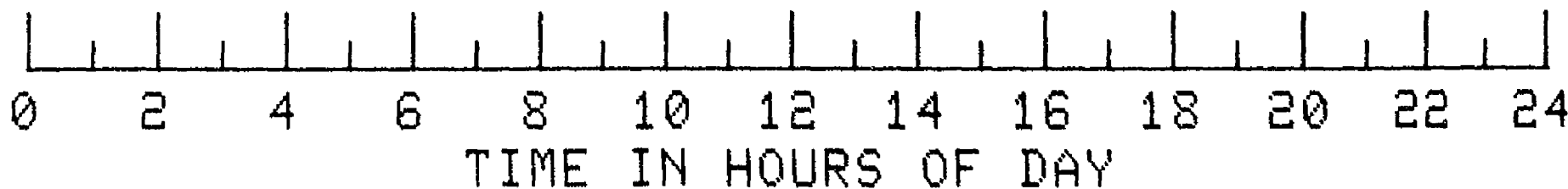
| SHE | | INP | | |
|-----|-------------|-----|-----|--|
| 25N | 0r 1r 1r 2r | 5r | 8r | |
| 4H | 25N | 23N | 22N | |
| | 4H | 5H | 6H | |

S

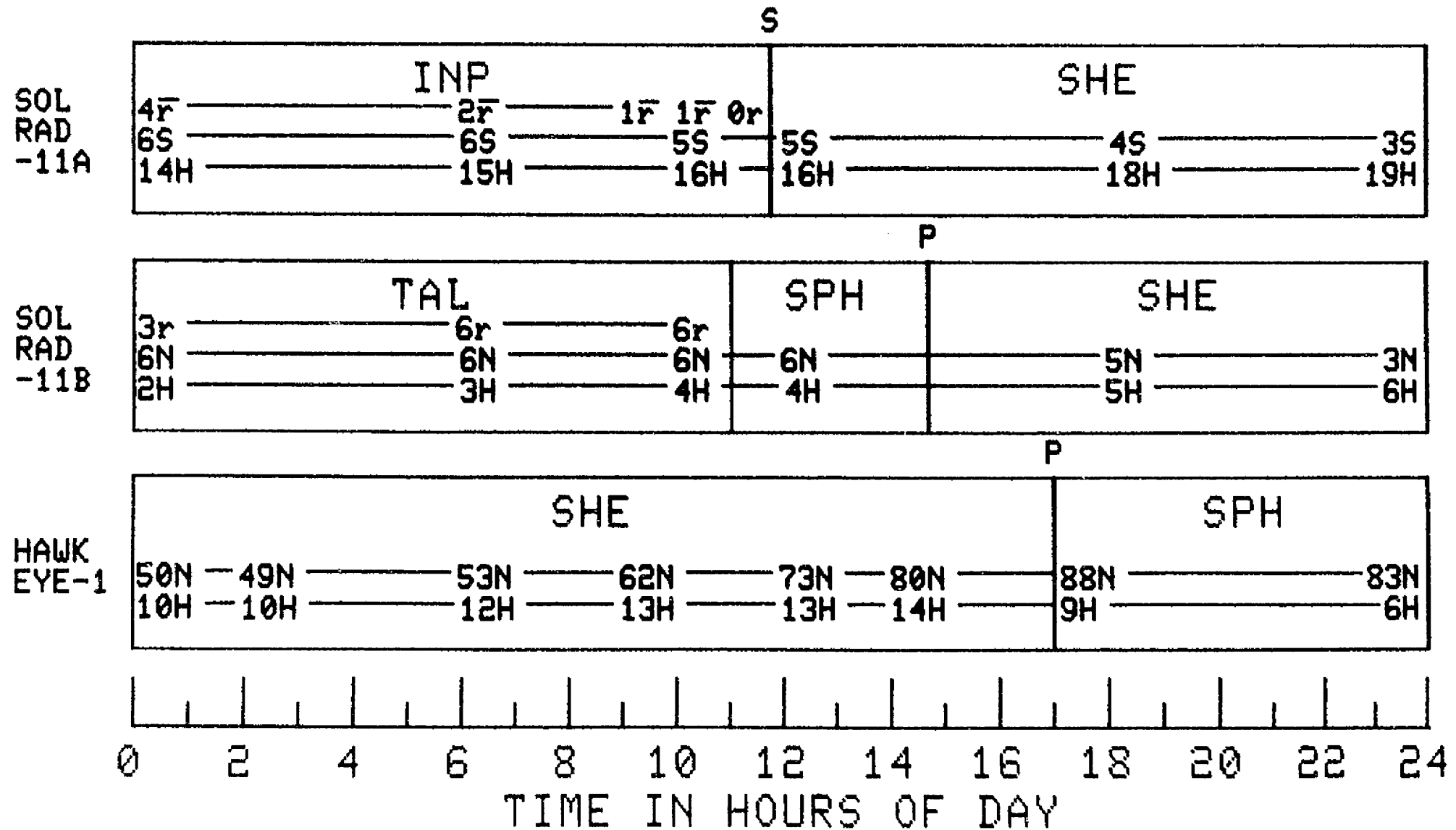
P

UELA
-5B

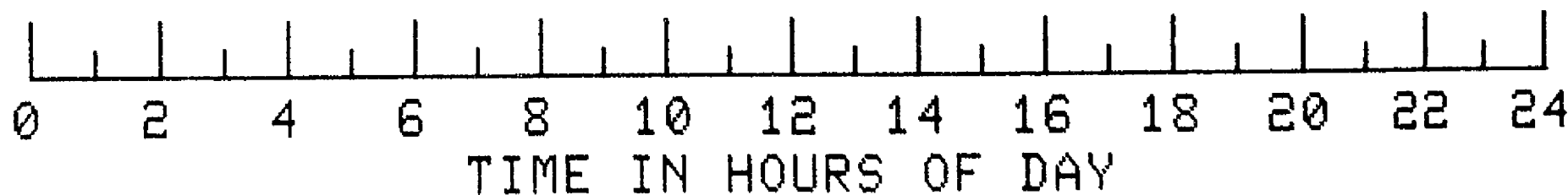
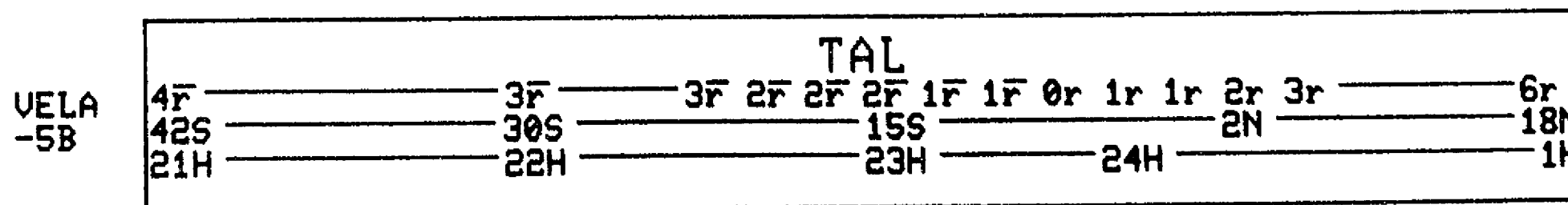
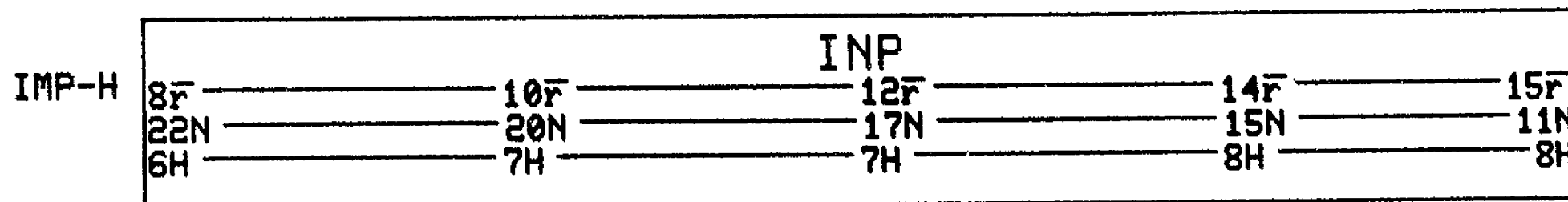
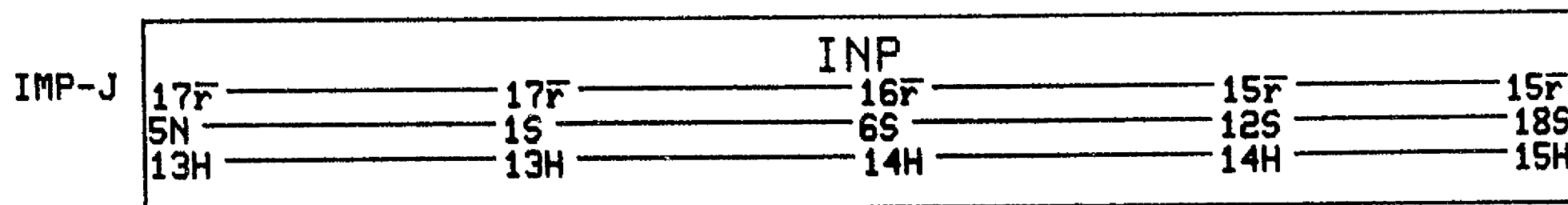
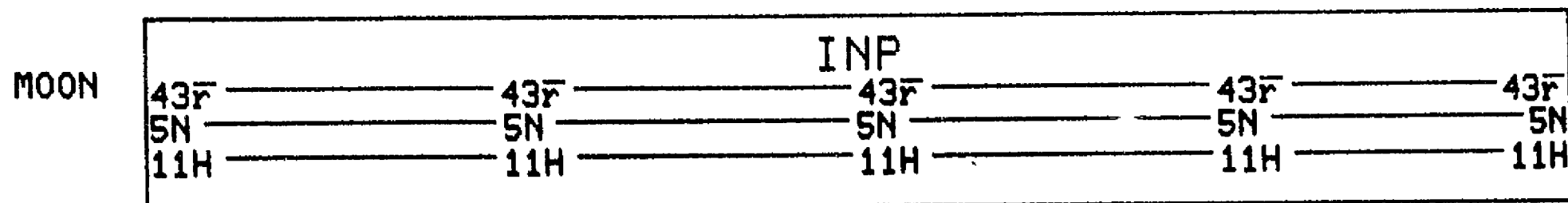
| INP | | SHE | | SPH | |
|-------------|-----|-----|-----|-----|--|
| 2r 1r 1r 0r | 45S | 54S | 50S | 42S | |
| 40S | 15H | 18H | 20H | 21H | |



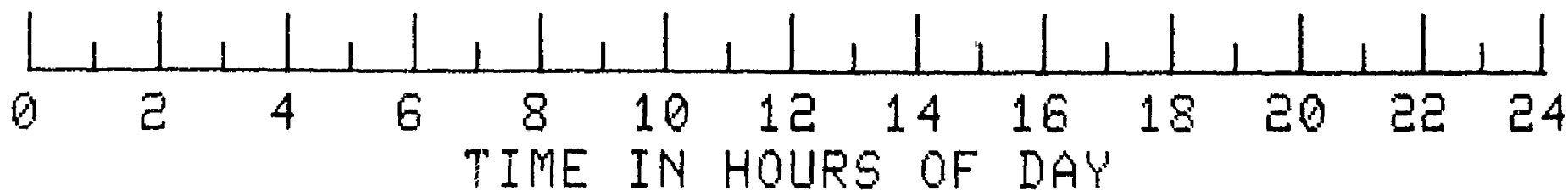
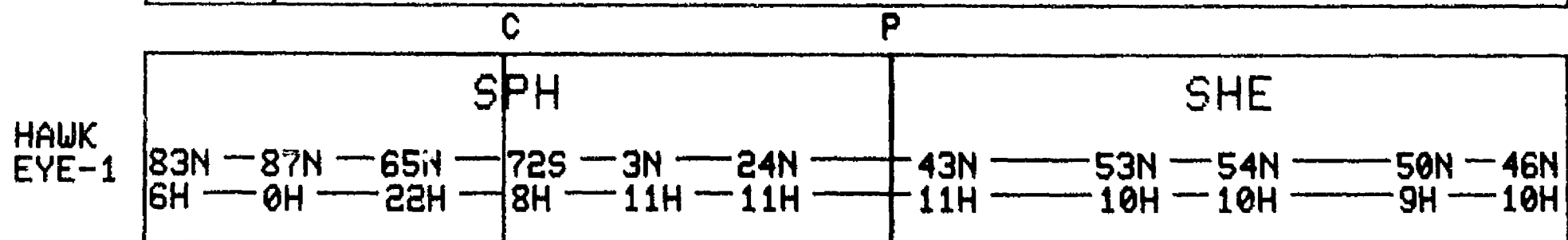
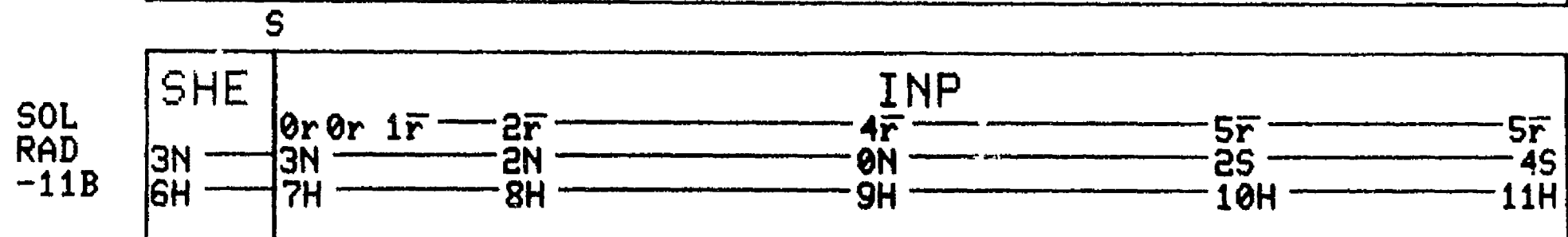
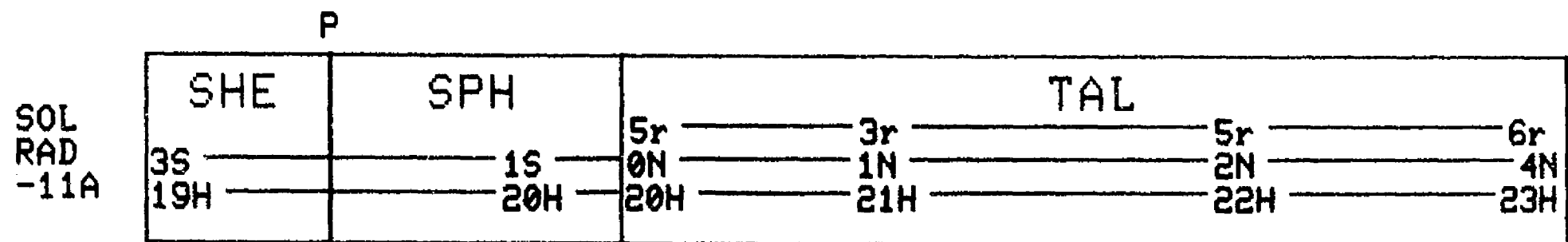
DAY 17 1977



DAY 18 1977

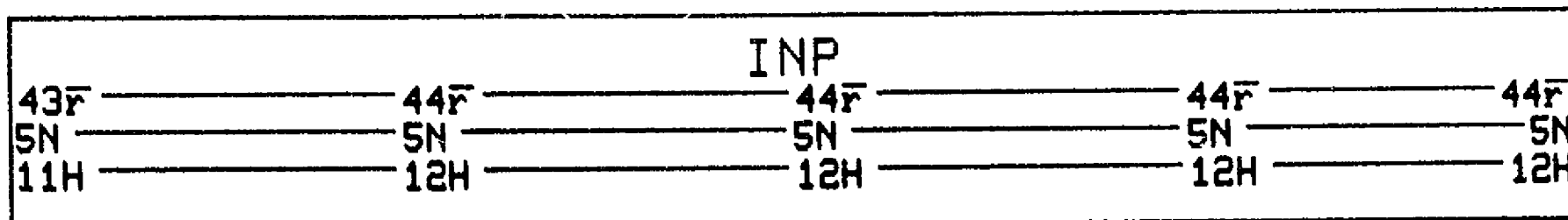


DAY 18 1977

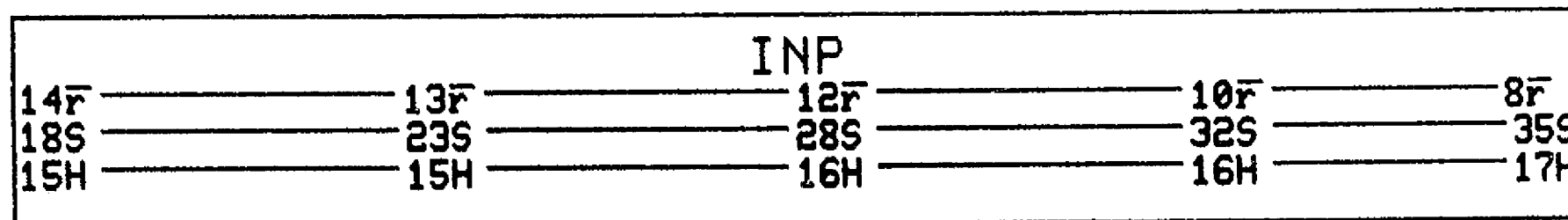


DAY 19 1977

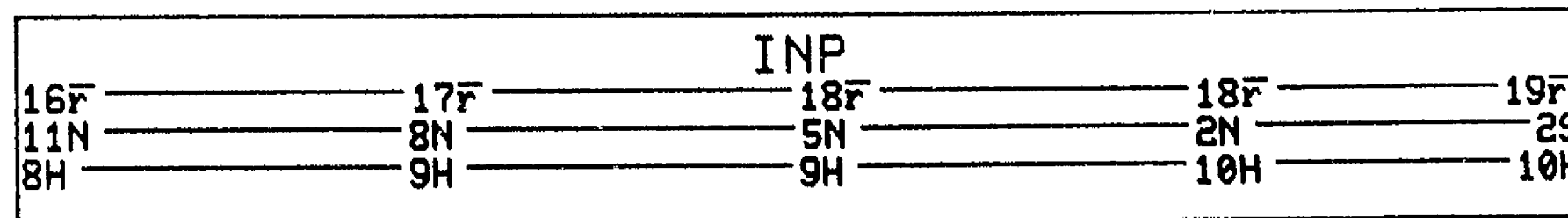
MOON



IMP-J

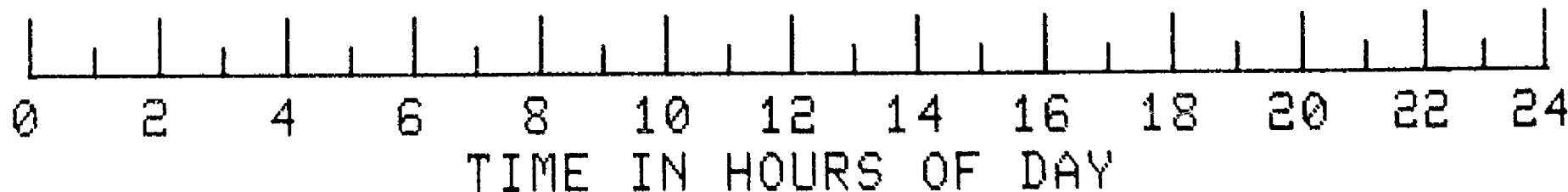
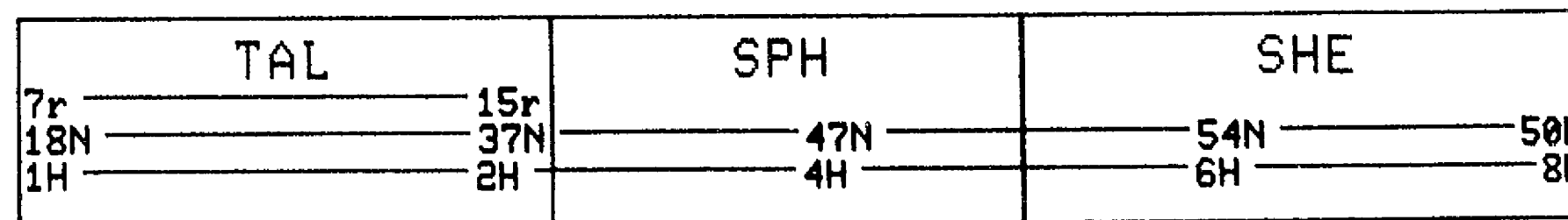


IMP-H



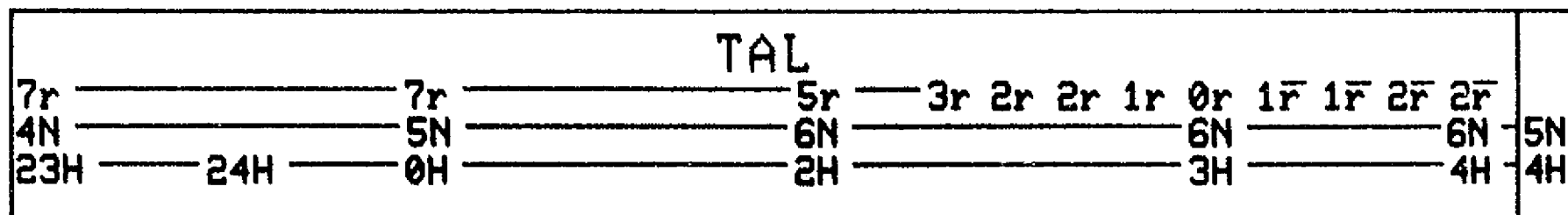
P

VELA
-5B

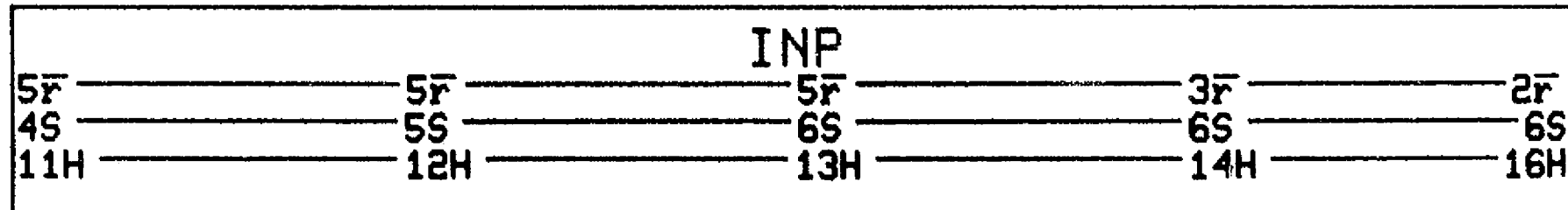


DAY 19 1977

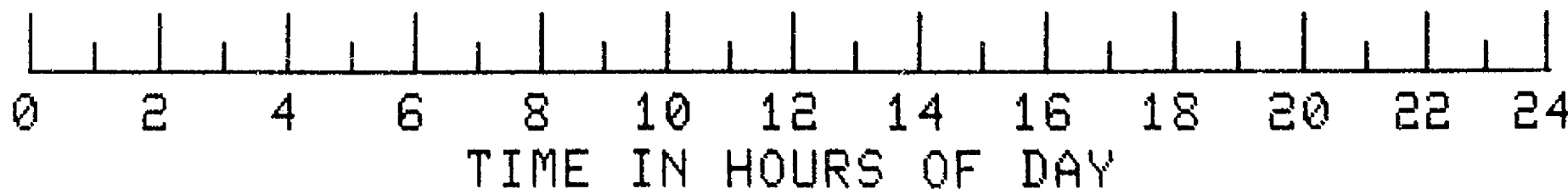
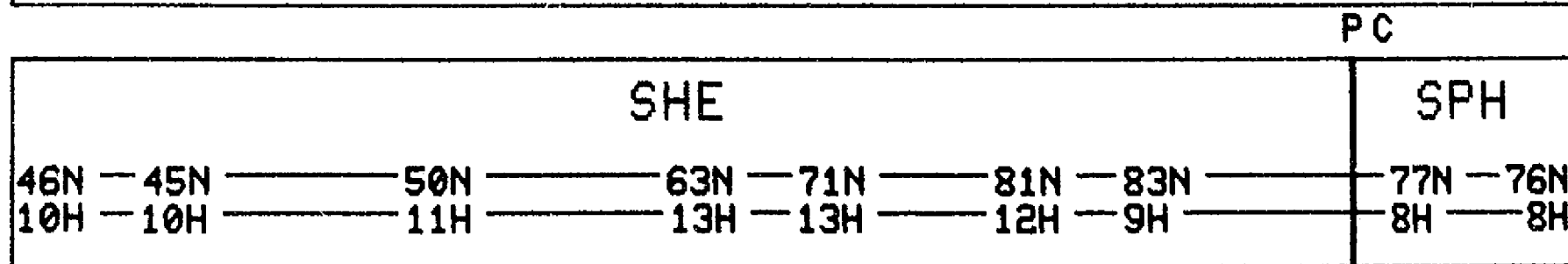
SOL
RAD
-11A



SOL
RAD
-11B

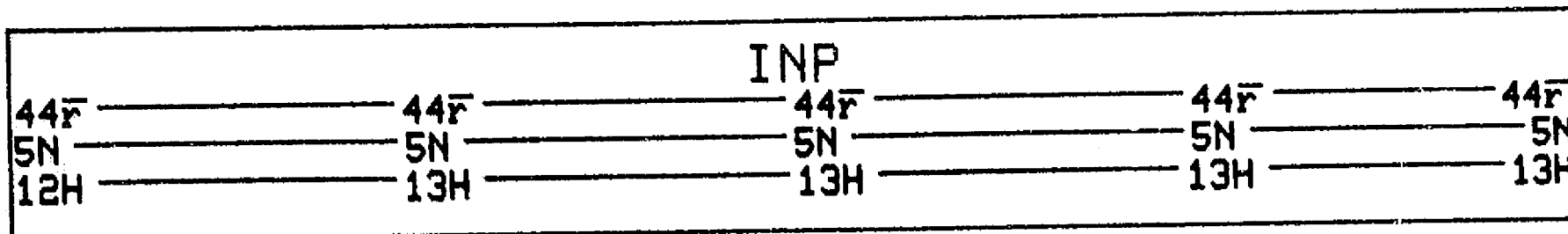


HAWK
EYE-1

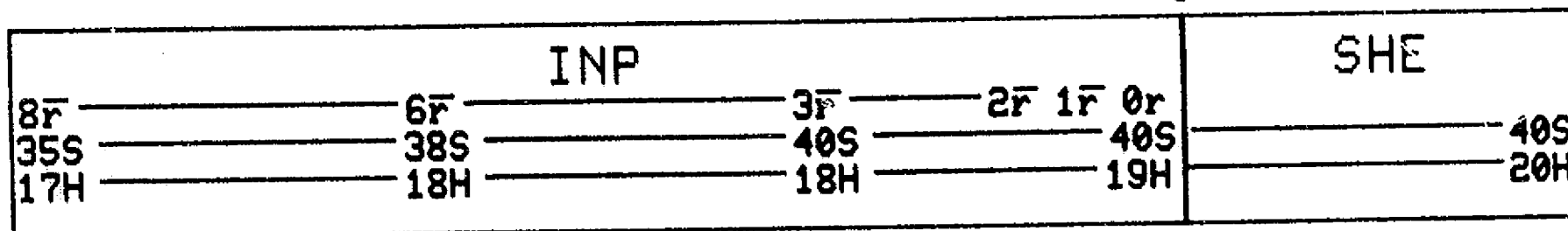


DAY 20 1977

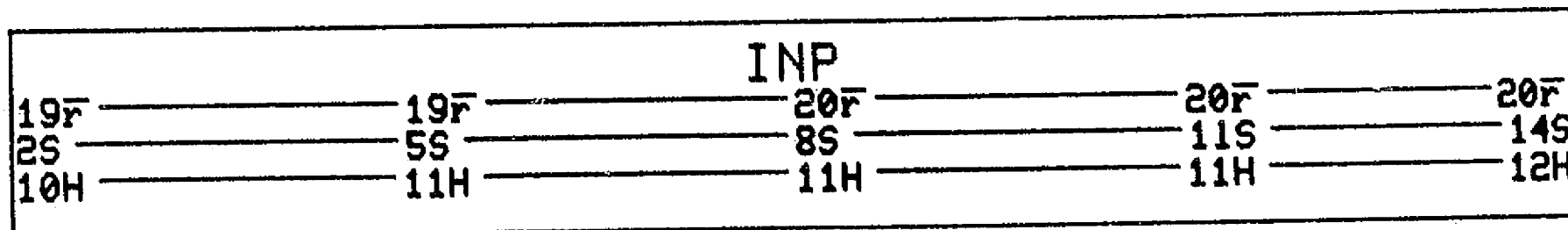
MOON



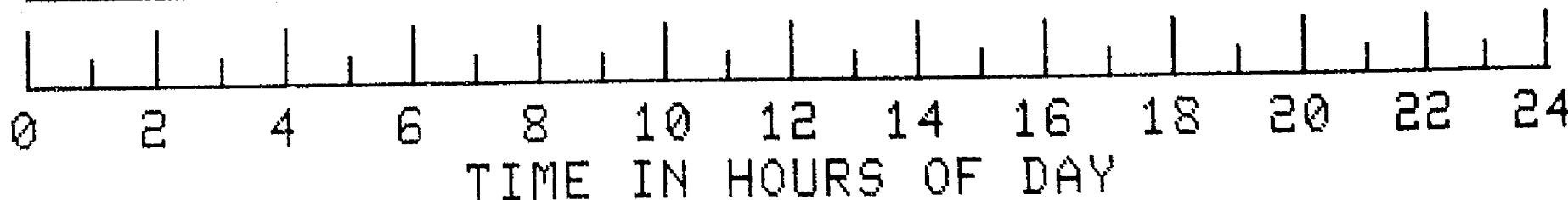
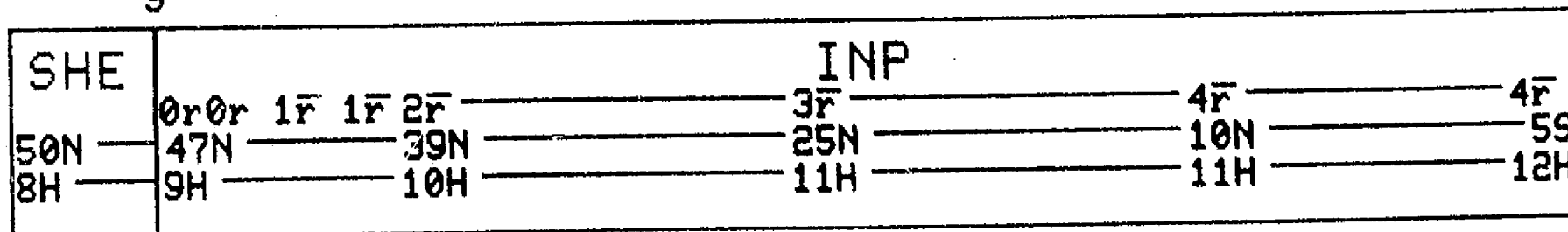
IMP-J



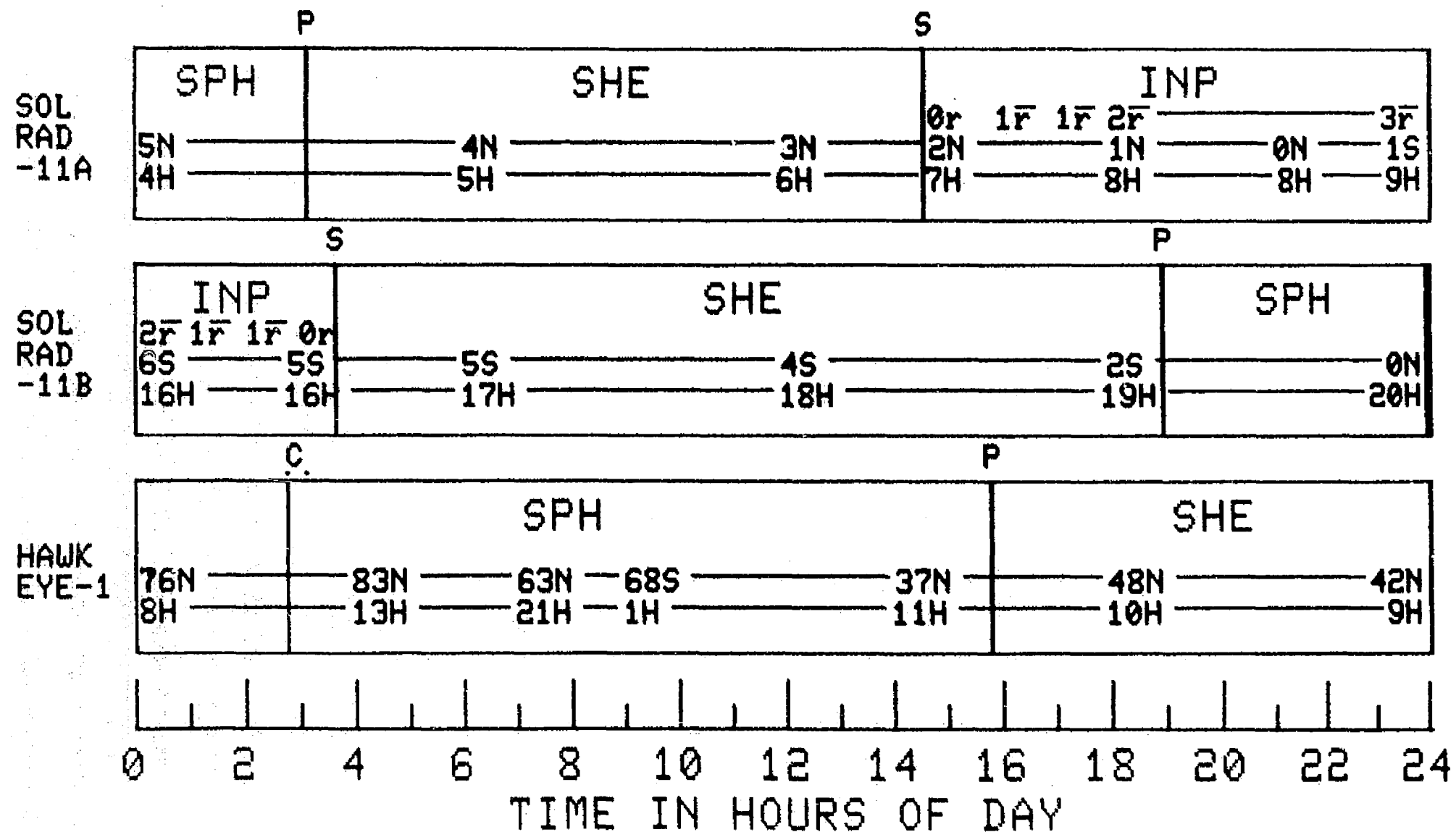
IMP-H



VELA
-5B

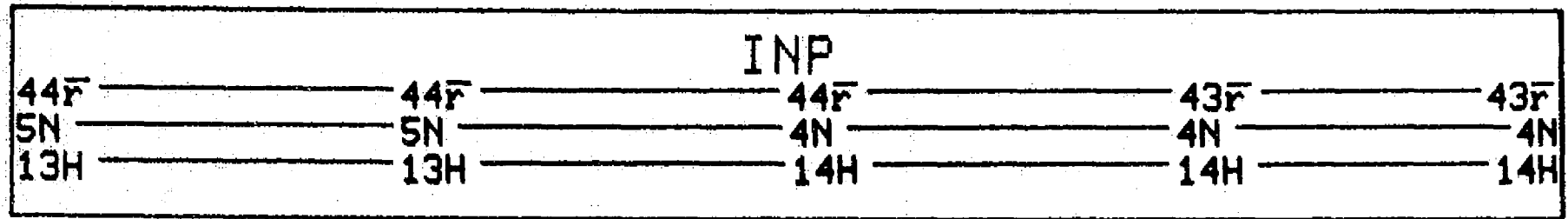


DAY 20 1977

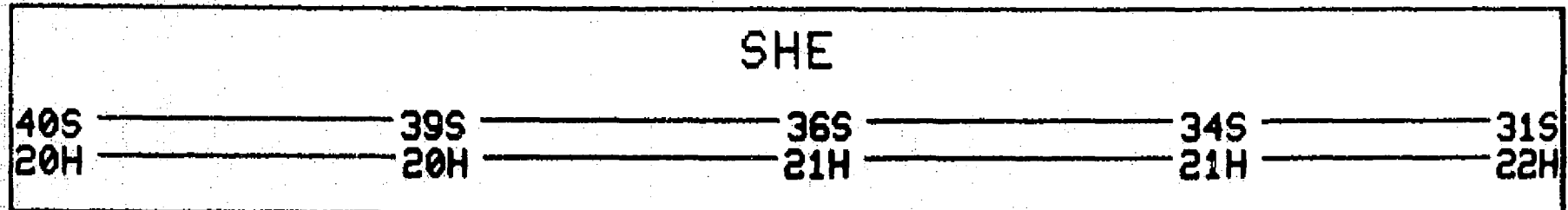


DAY 21 1977

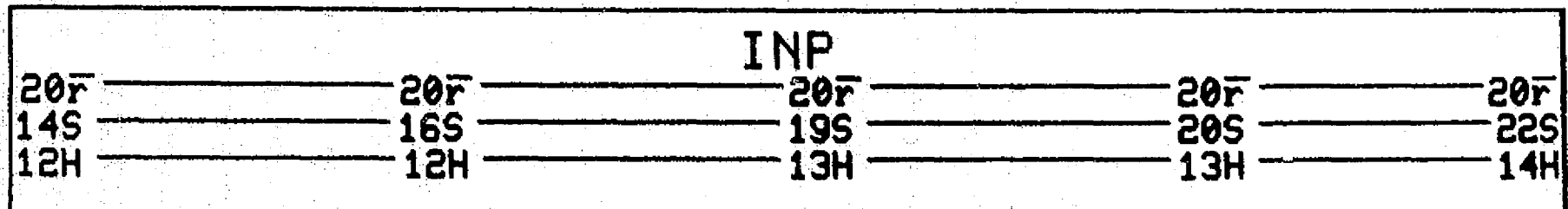
MOON



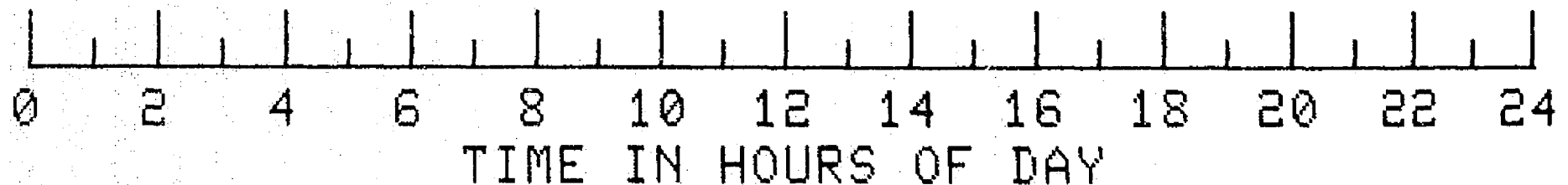
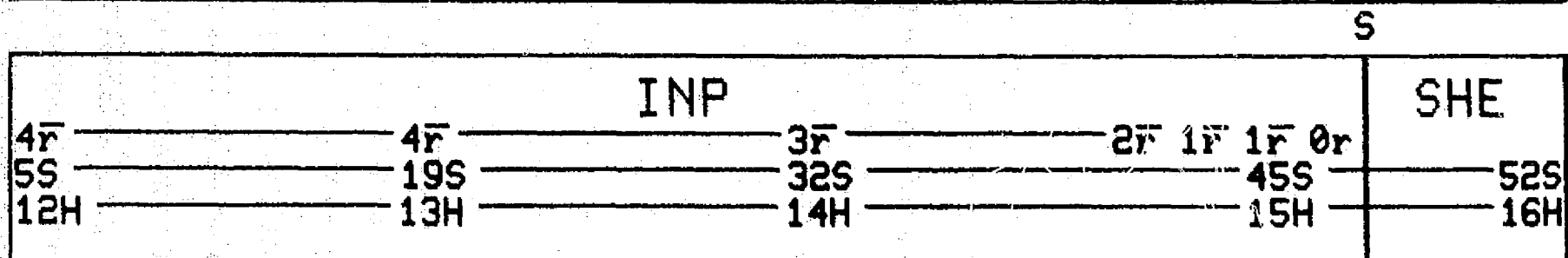
IMP-J



IMP-H

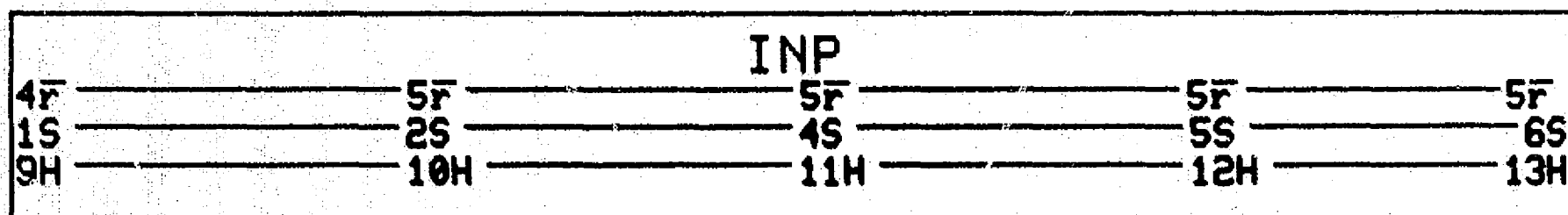


VELA
-5B

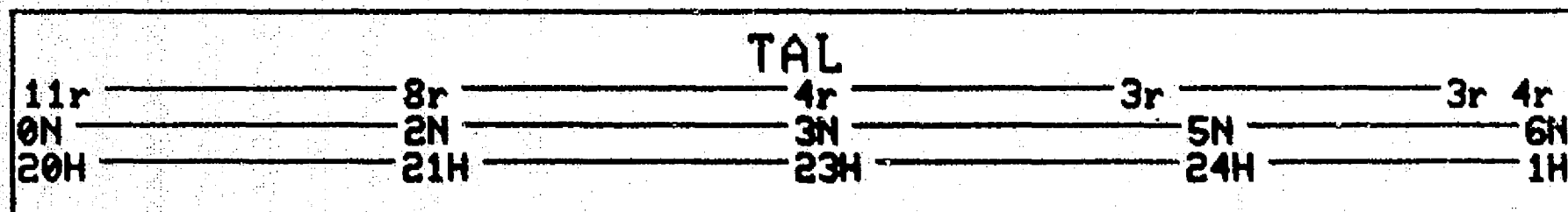


DAY 21 1977

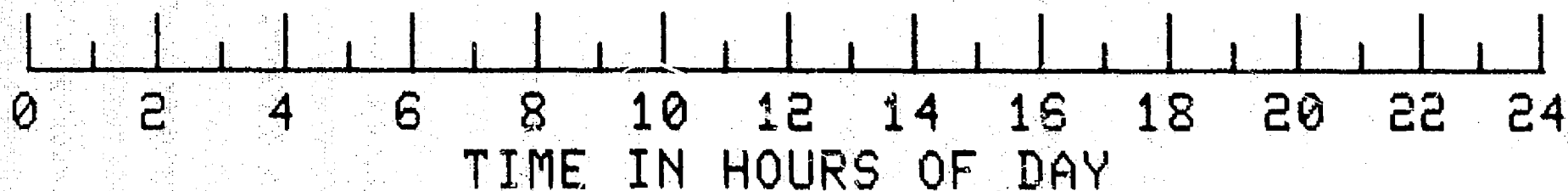
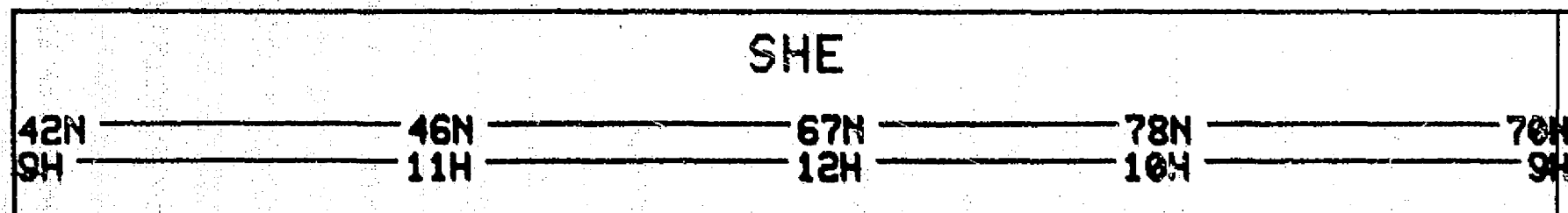
SOL
RAD
-11A



SOL
RAD
-11B

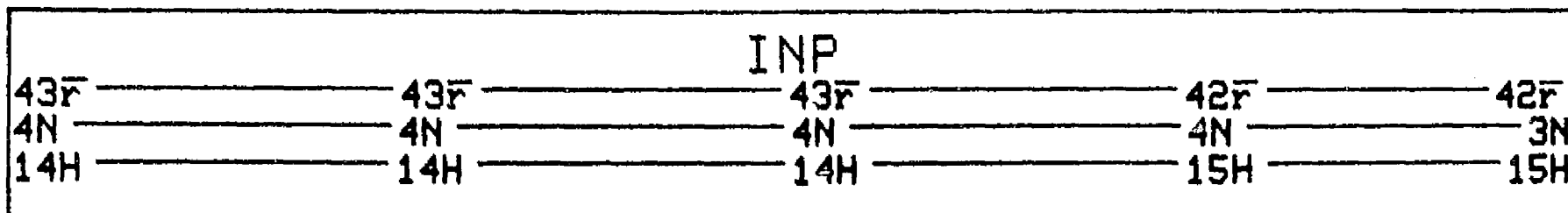


HAWK
EYE-1



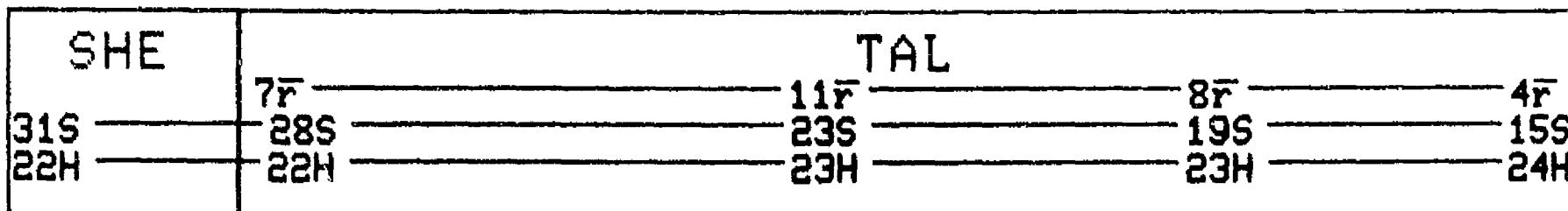
DAY 22 1977

MOON

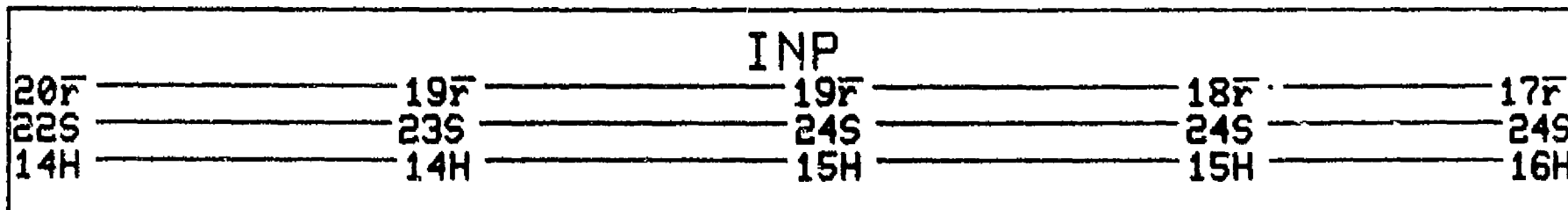


P

IMP-J

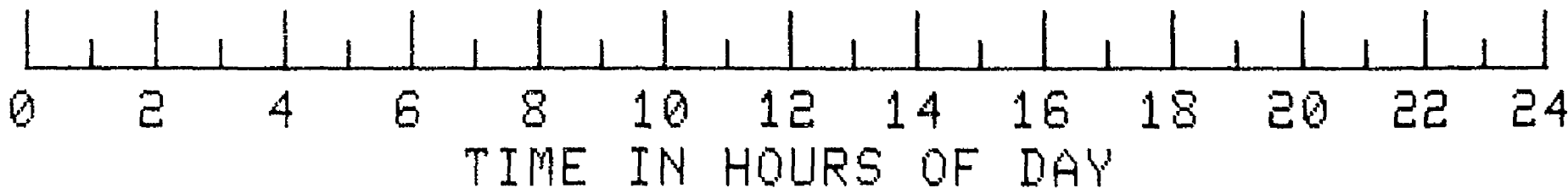
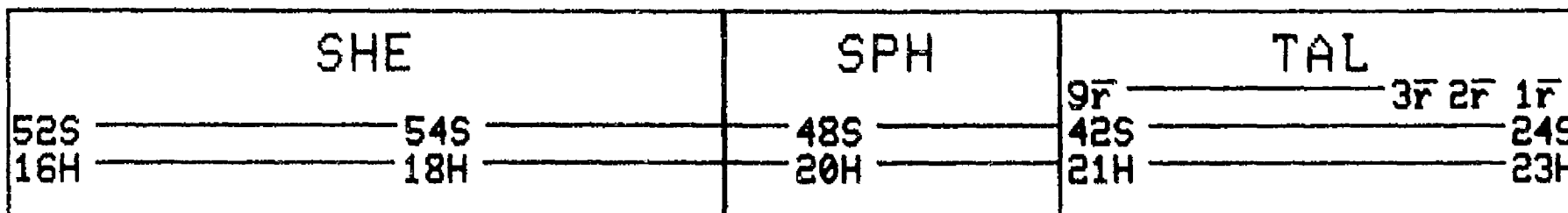


IMP-H

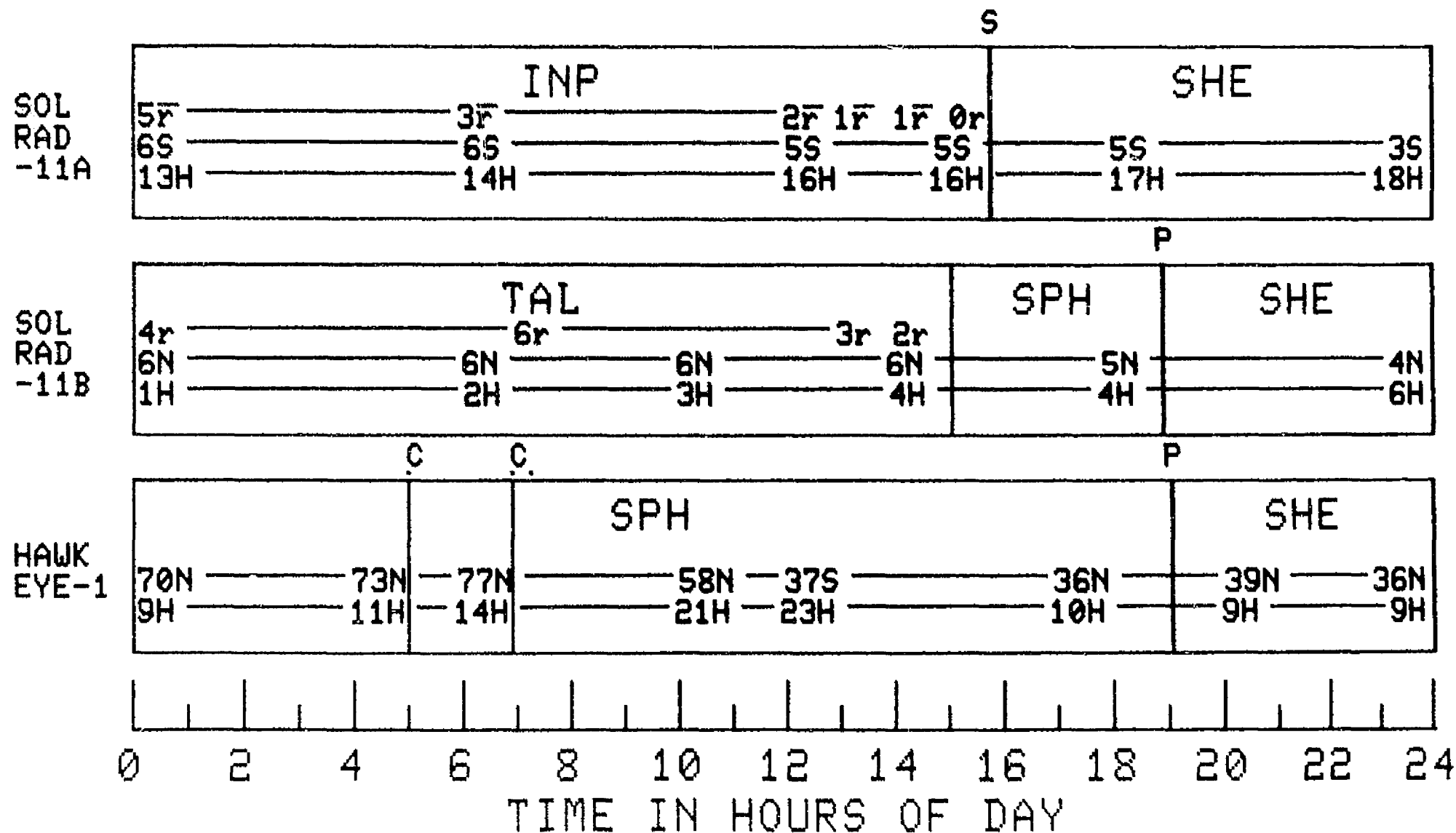


P

VELA
-5B

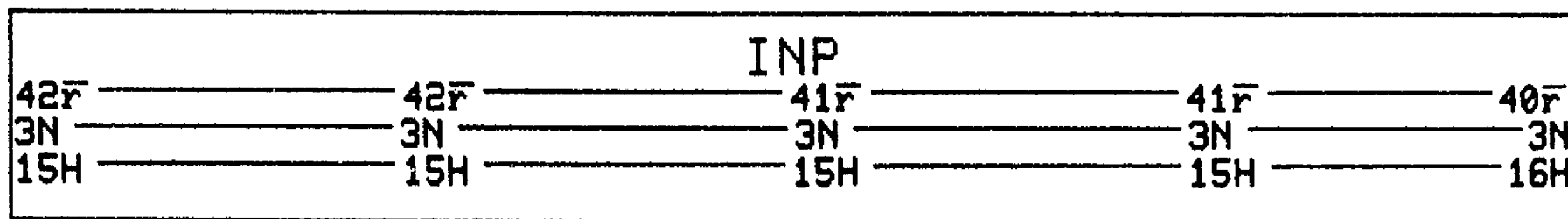


DAY 22 1977

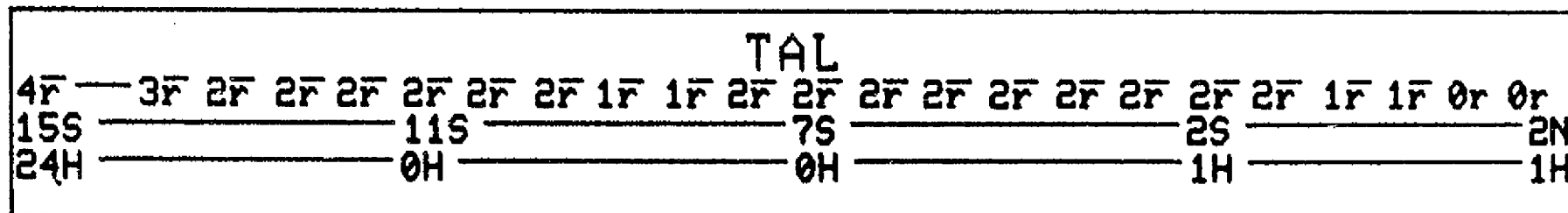


DAY 23 1977

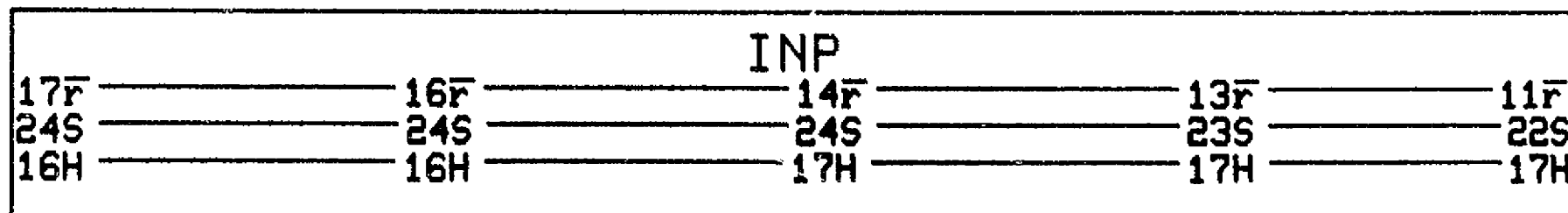
MOON



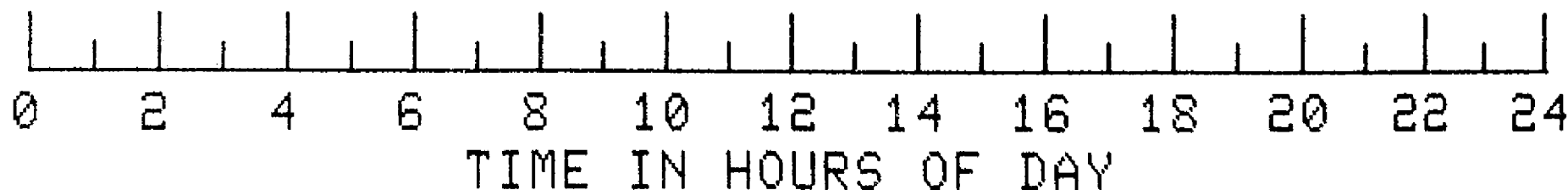
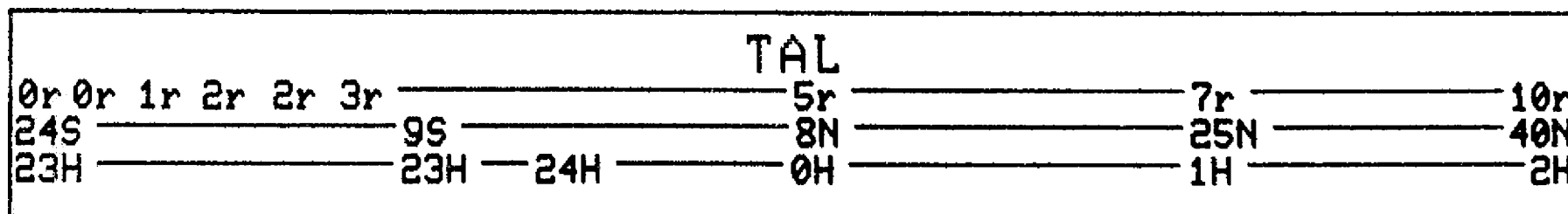
IMP-J



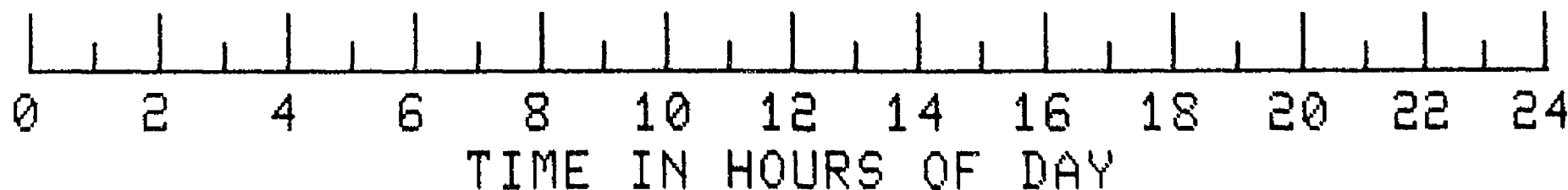
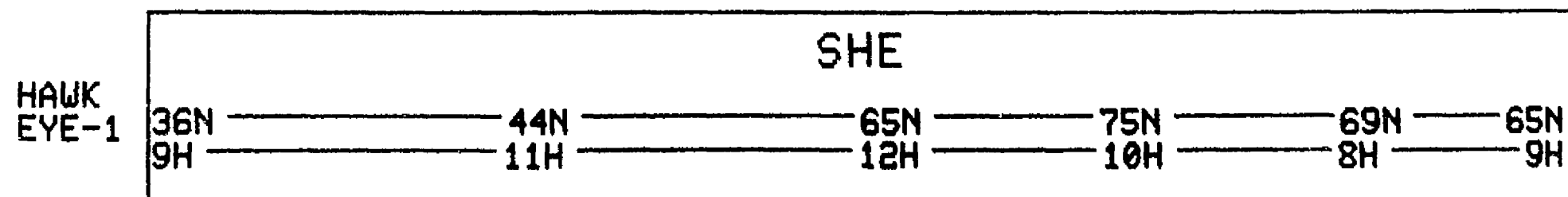
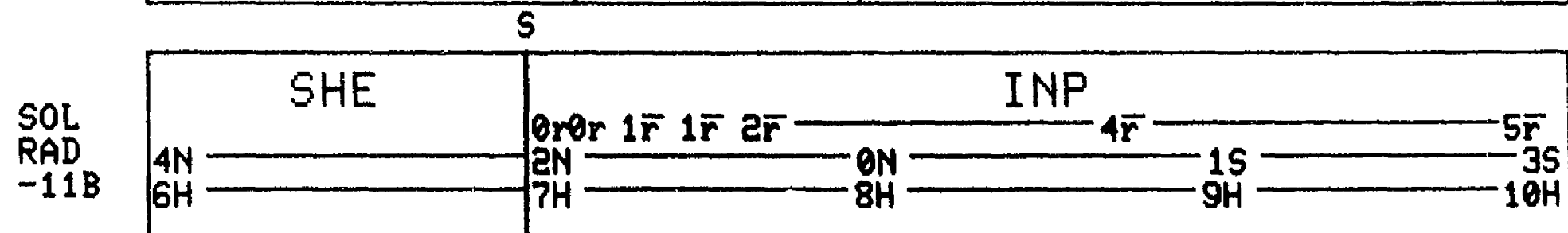
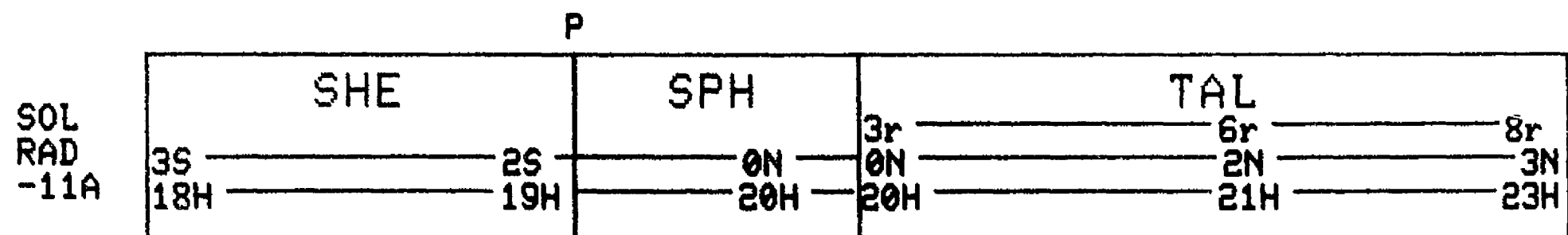
IMP-H



VELA
-5B

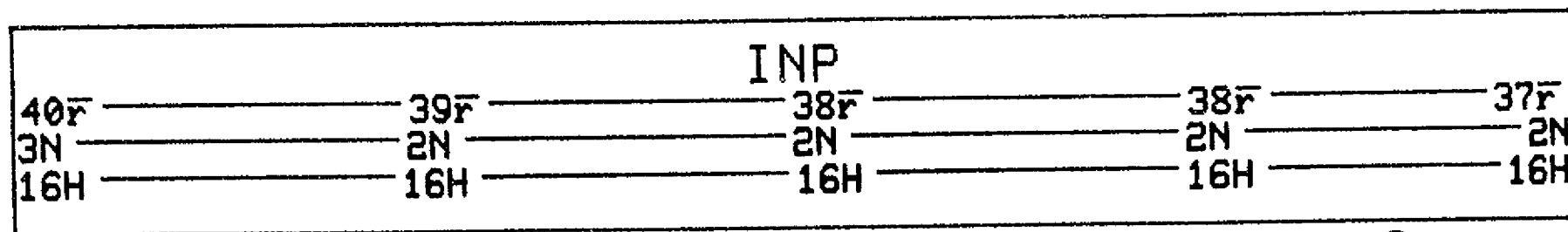


DAY 23 1977



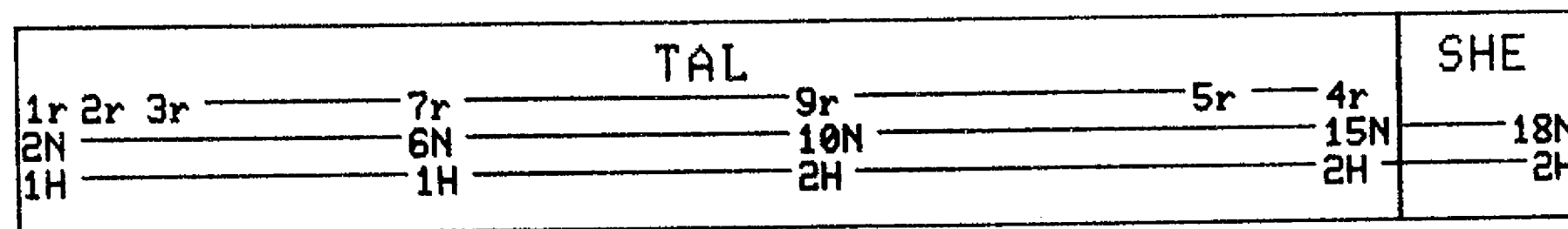
DAY 24 1977

MOON

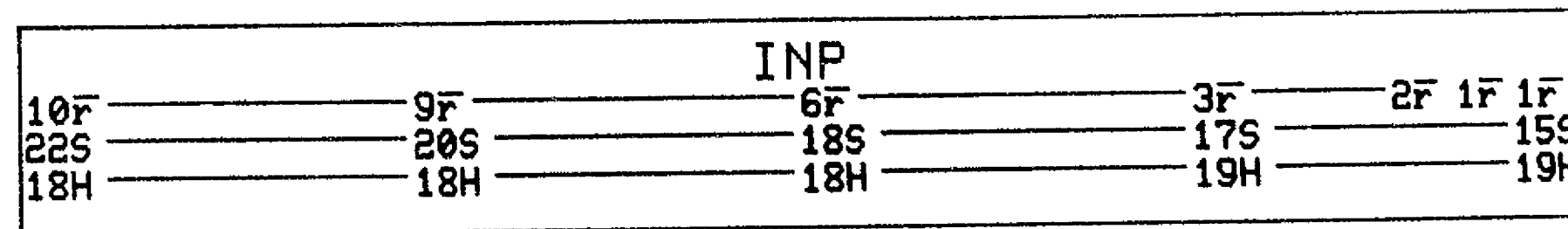


P

IMP-J



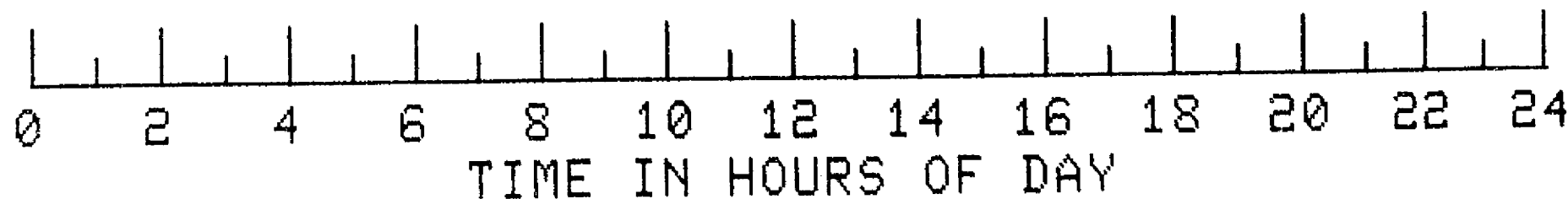
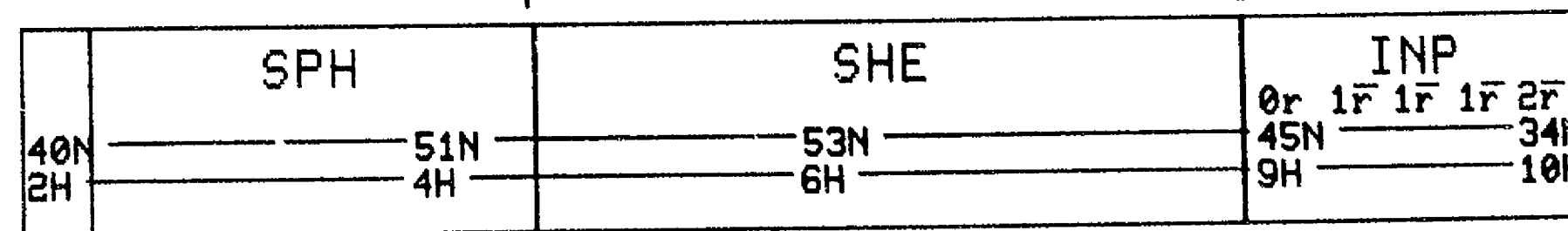
IMP-H



P

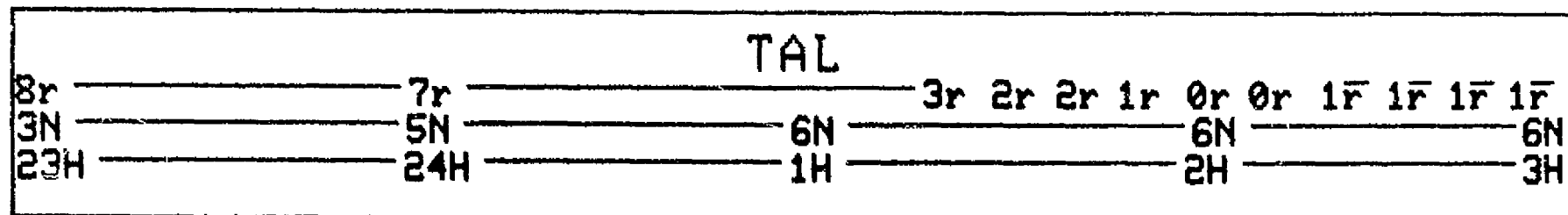
S

VELA
-5B

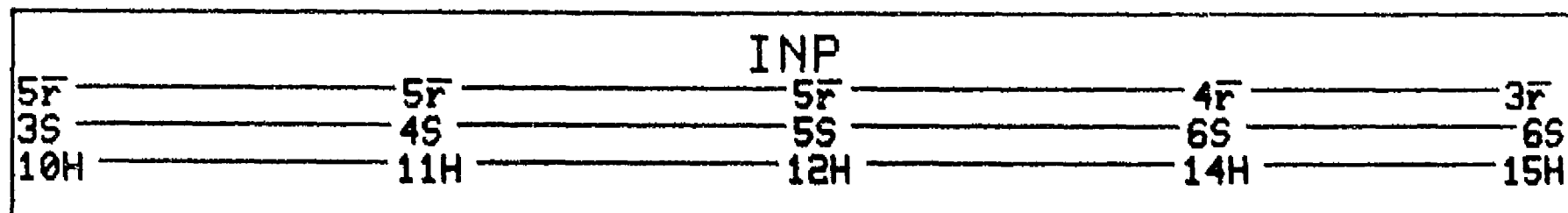


DAY 24 1977

SOL
RAD
-11A



SOL
RAD
-11B

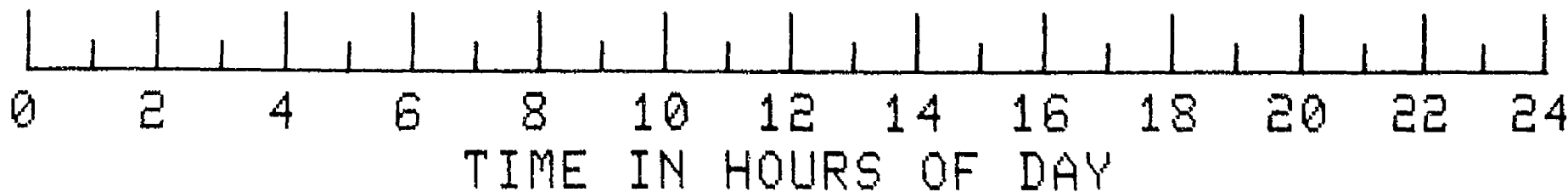
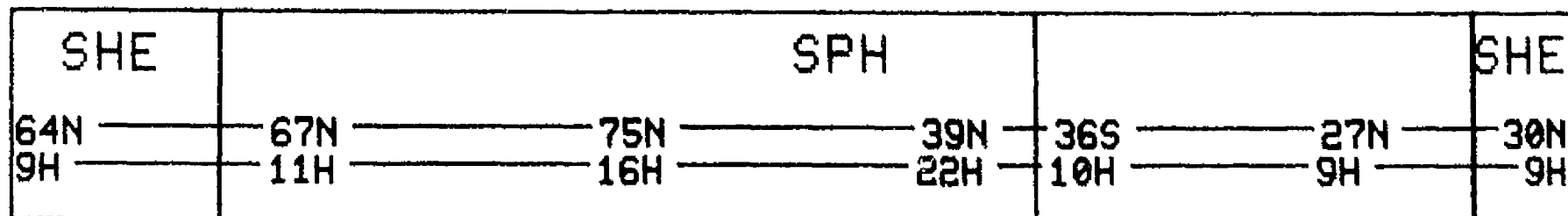


P

C

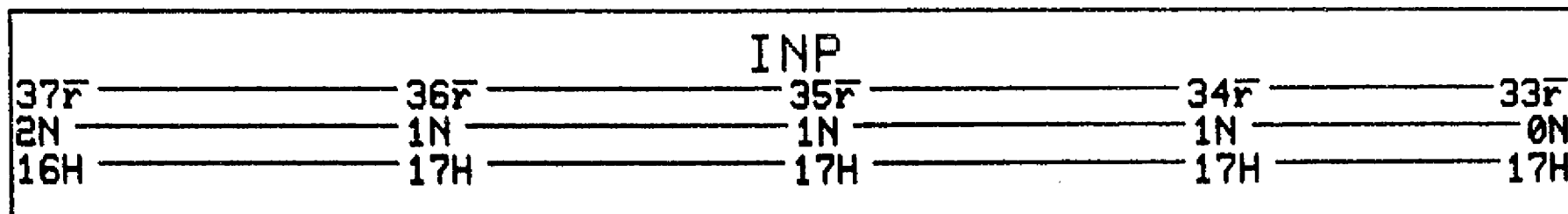
P

HAWK
EYE-1

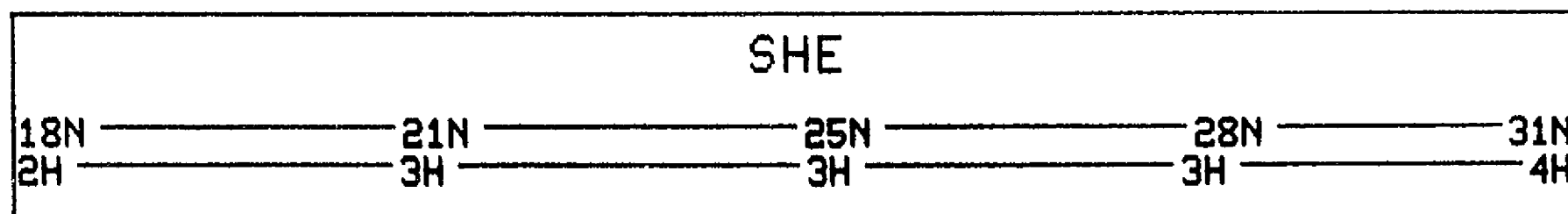


DAY 25 1977

MOON

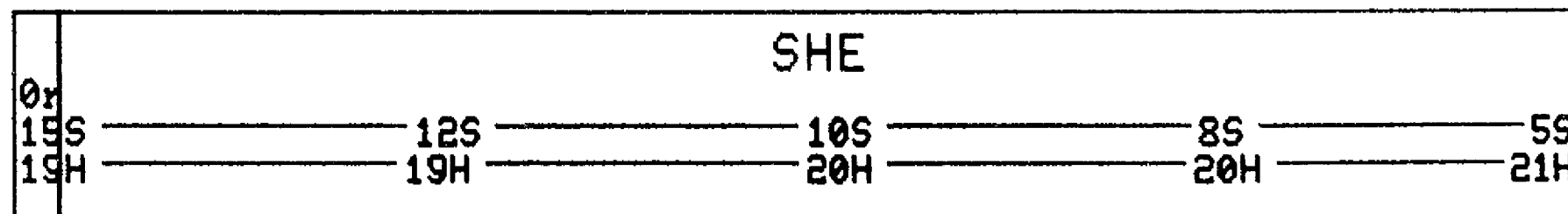


IMP-J

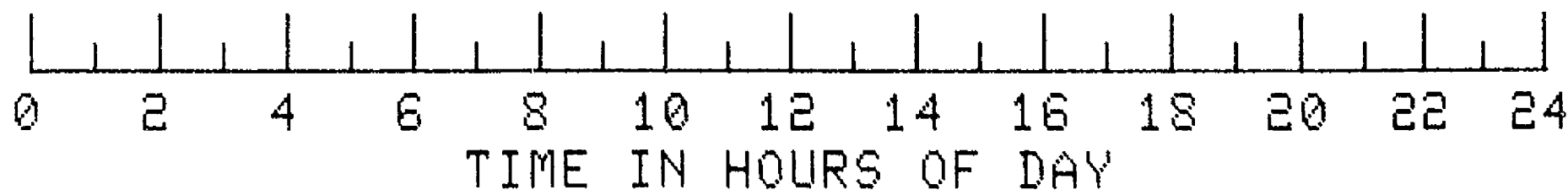
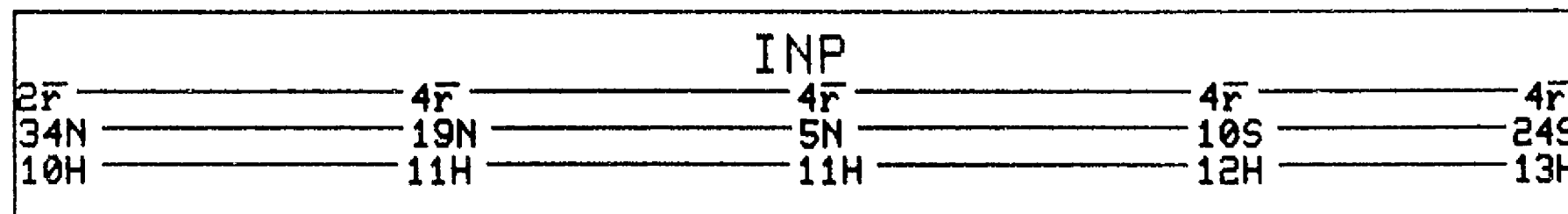


S

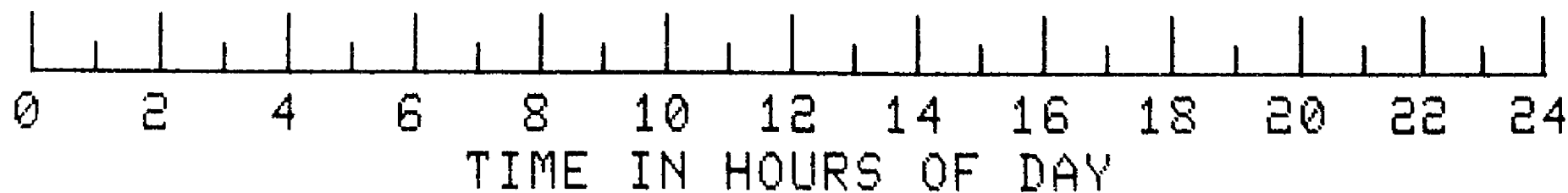
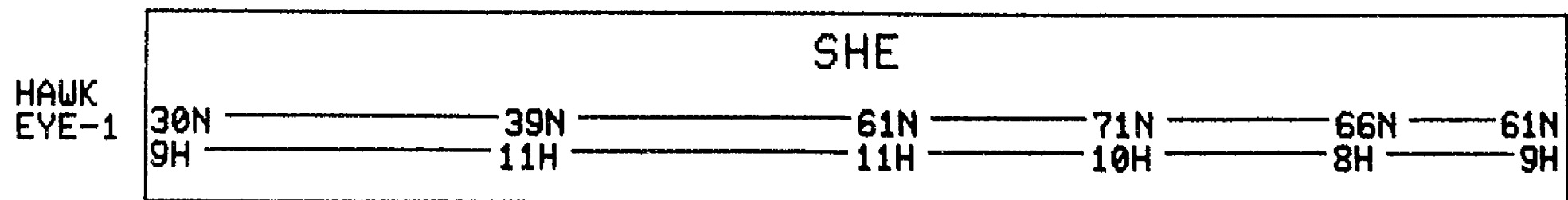
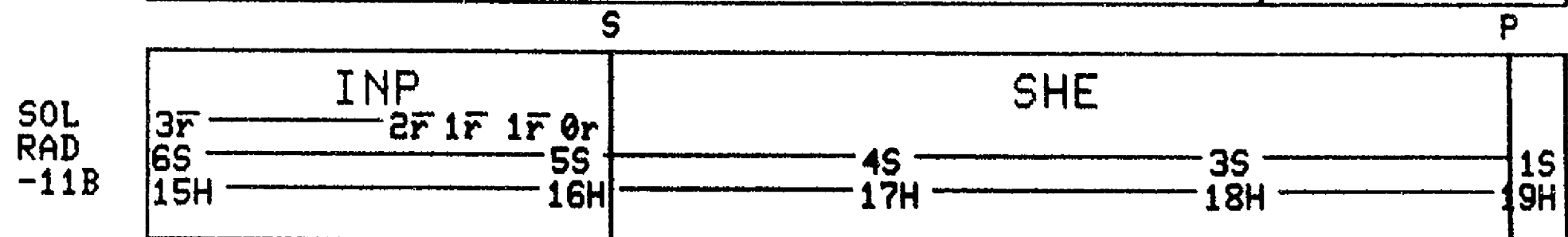
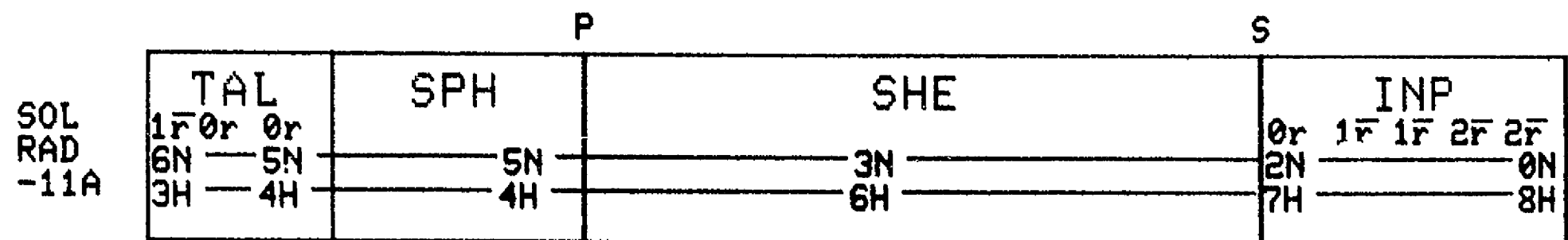
IMP-H



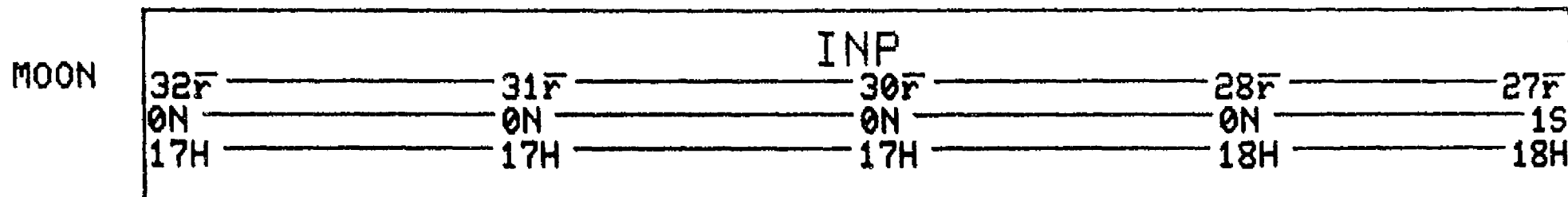
VELA
-5B



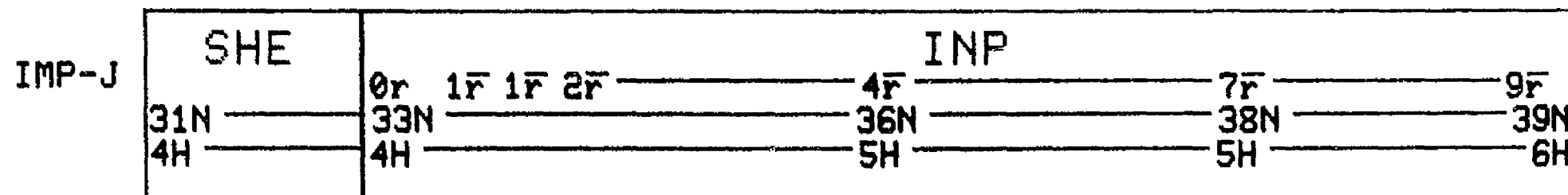
DAY 25 1977



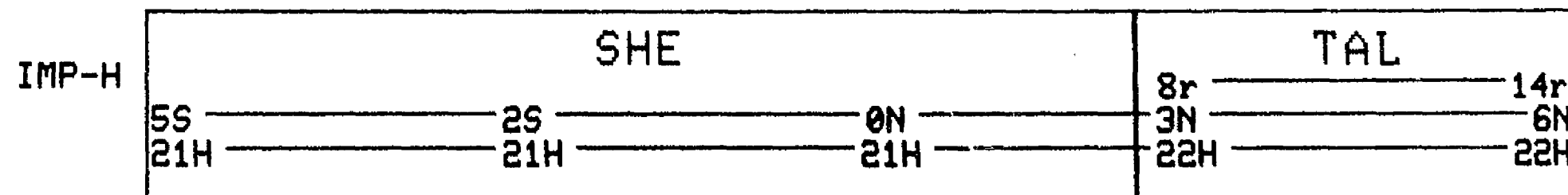
DAY 26 1977



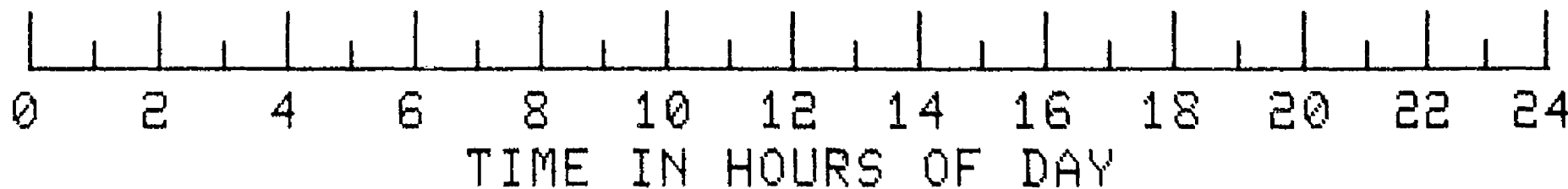
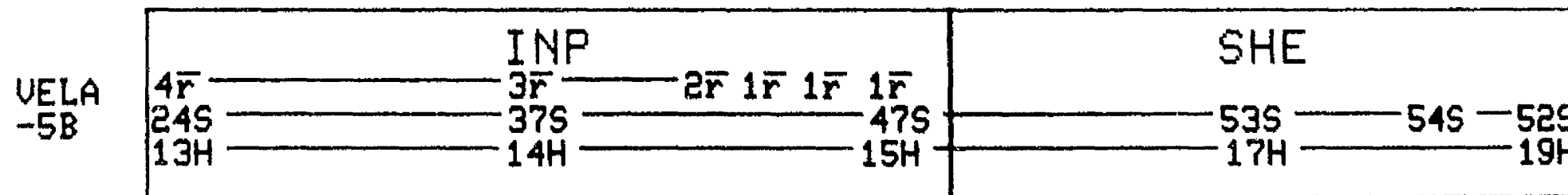
S



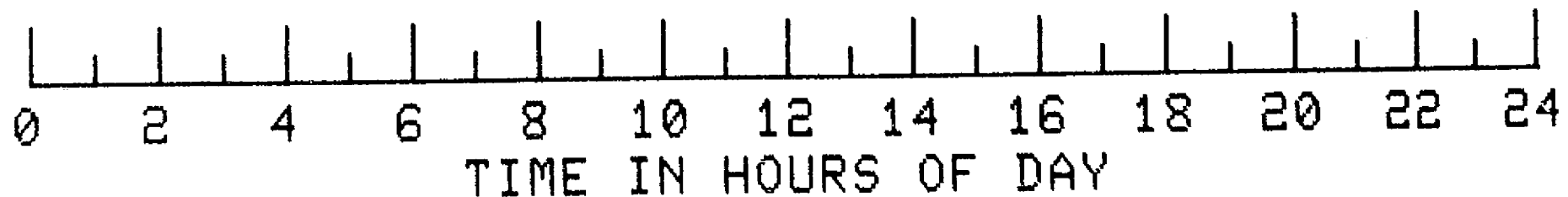
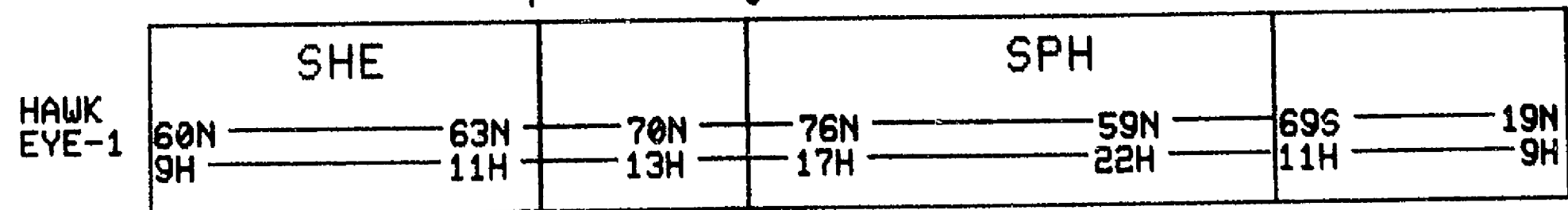
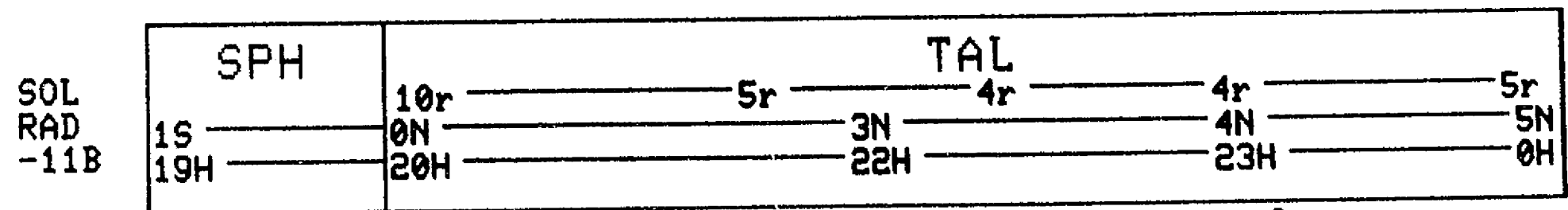
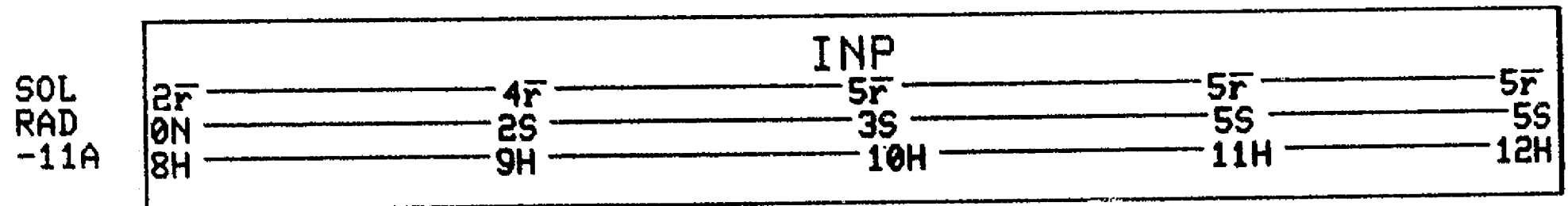
P



S



DAY 26 1977



DAY 27 1977

MOON

| INP | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 27 \overline{r} | 25 \overline{r} | 24 \overline{r} | 22 \overline{r} | 21 \overline{r} |
| 1S | 1S | 1S | 1S | 2S |
| 18H | 18H | 18H | 18H | 19H |

IMP-J

| INP | | | | |
|------------------|-------------------|-------------------|-------------------|-------------------|
| 9 \overline{r} | 11 \overline{r} | 13 \overline{r} | 14 \overline{r} | 16 \overline{r} |
| 39N | 40N | 40N | 40N | 39N |
| 6H | 6H | 7H | 7H | 8H |

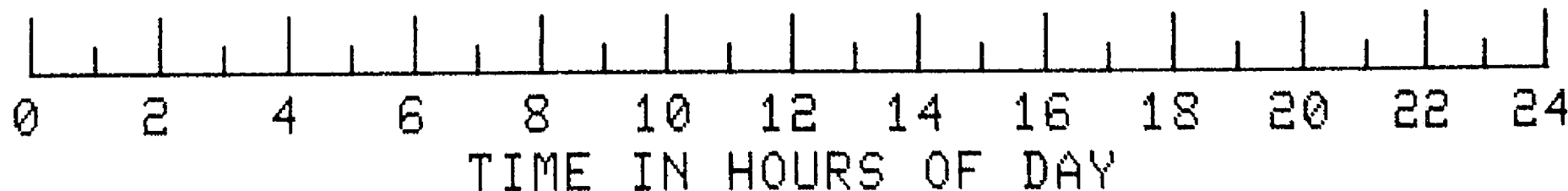
IMP-H

| TAL | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 14 \overline{r} | 13 \overline{r} | 10 \overline{r} | 11 \overline{r} | 13 \overline{r} |
| 6N | 9N | 12N | 14N | 17N |
| 22H | 23H | 23H | 23H | 24H |

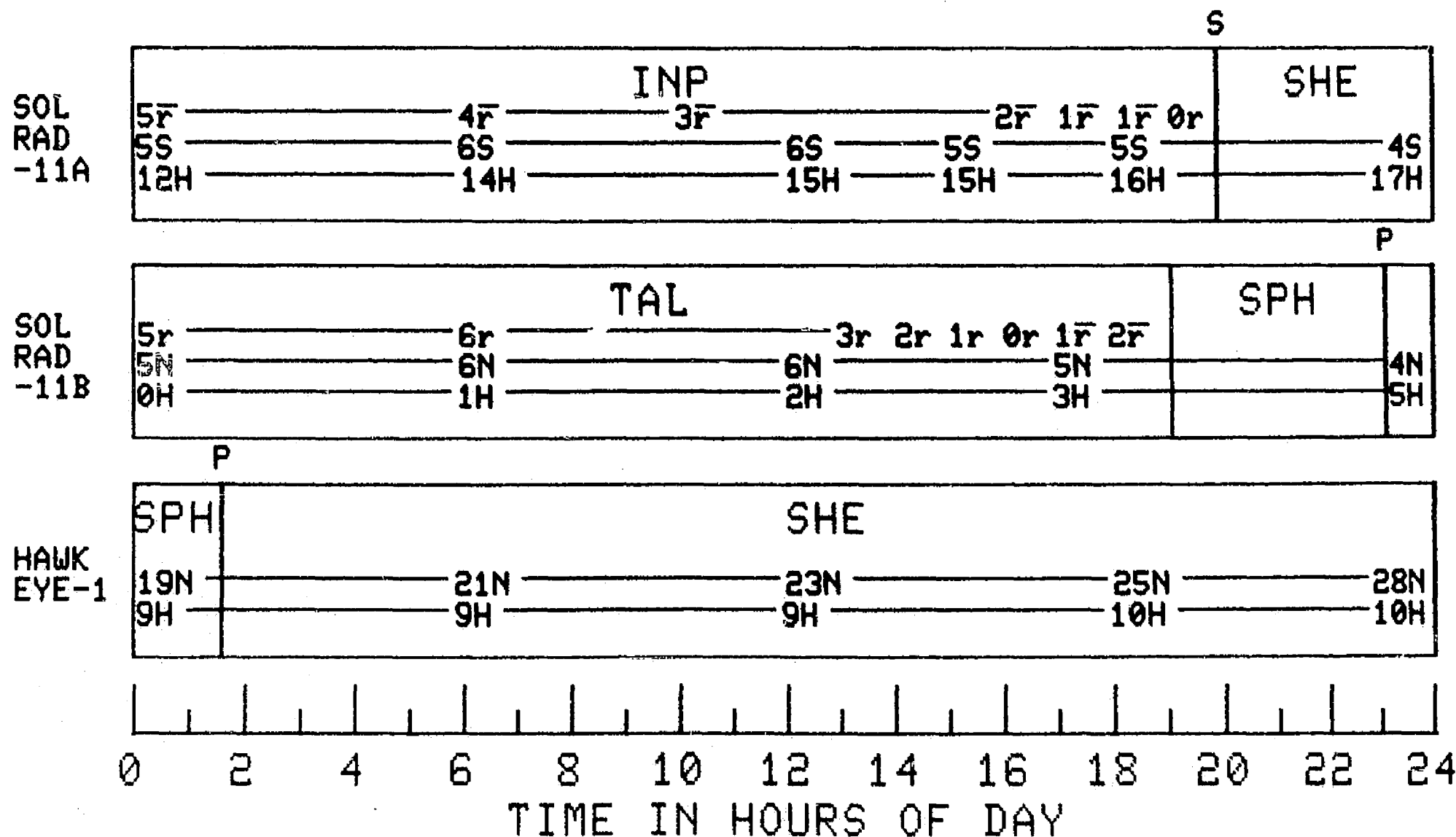
P

VELA
-5B

| SHE | SPH | TAL | | | | | | | |
|-----|-----|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| 52S | 45S | 7 \overline{r} | 3 \overline{r} | 2 \overline{r} | 1 \overline{r} | 0 \overline{r} | 1 \overline{r} | 2 \overline{r} | 3 \overline{r} |
| 19H | 20H | 39S | 33S | 18S | | | | | 2S |
| | | 21H | 22H | 23H | | | | | 23H |



DAY 27 1977



DAY 28 1977

MOON

| | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 21r | 19r | 25 | 19H | 17r | 25 | 19H | 15r | 13r |
| 25 | 25 | 25 | 19H | 25 | 25 | 19H | 25 | 35 |
| 19H | 19H | 19H | 19H | 19H | 19H | 19H | 19H | 19H |

INP

IMP-J

| | | | | | | | | | | | | | | |
|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|-----|
| 16r | 39N | 8H | 17r | 37N | 8H | 18r | 35N | 9H | 18r | 32N | 9H | 18r | 28N | 10H |
| 17r | 37N | 8H | 18r | 35N | 9H | 18r | 32N | 9H | 18r | 32N | 9H | 18r | 28N | 10H |
| 17r | 37N | 8H | 18r | 35N | 9H | 18r | 32N | 9H | 18r | 32N | 9H | 18r | 28N | 10H |

INP

IMP-H

| | | | | | | | | | | | | | | |
|-----|-----|-----|-----|-----|----|-----|-----|----|-----|-----|----|----|-----|----|
| 13r | 17N | 24H | 15r | 19N | 0H | 14r | 21N | 1H | 10r | 23N | 1H | 8r | 24N | 2H |
| 13r | 17N | 24H | 15r | 19N | 0H | 14r | 21N | 1H | 10r | 23N | 1H | 8r | 24N | 2H |
| 13r | 17N | 24H | 15r | 19N | 0H | 14r | 21N | 1H | 10r | 23N | 1H | 8r | 24N | 2H |

TAL

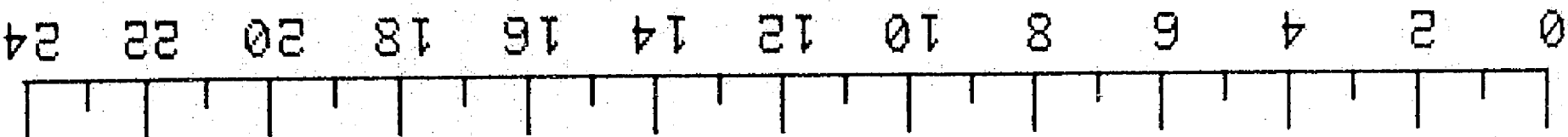
VELA
-5B

| | | | | | | | | | | | | | |
|----|----|-----|----|-----|-----|-----|-----|----|-----|-----|----|-----|----|
| 4r | 25 | 23H | 9r | 15N | 24H | 11r | 31N | 1H | 11r | 41N | 2H | 53N | 5H |
| 4r | 25 | 23H | 9r | 15N | 24H | 11r | 31N | 1H | 11r | 41N | 2H | 53N | 5H |
| 4r | 25 | 23H | 9r | 15N | 24H | 11r | 31N | 1H | 11r | 41N | 2H | 53N | 5H |

TAL

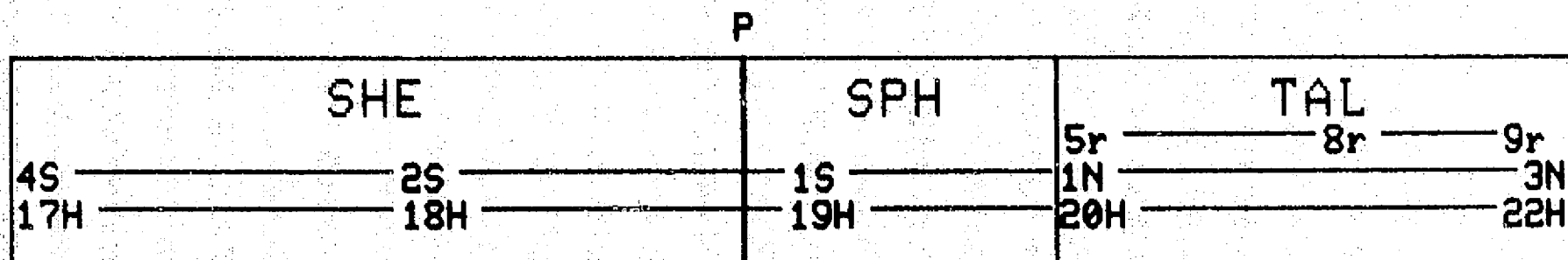
SPH

TIME IN HOURS OF DAY

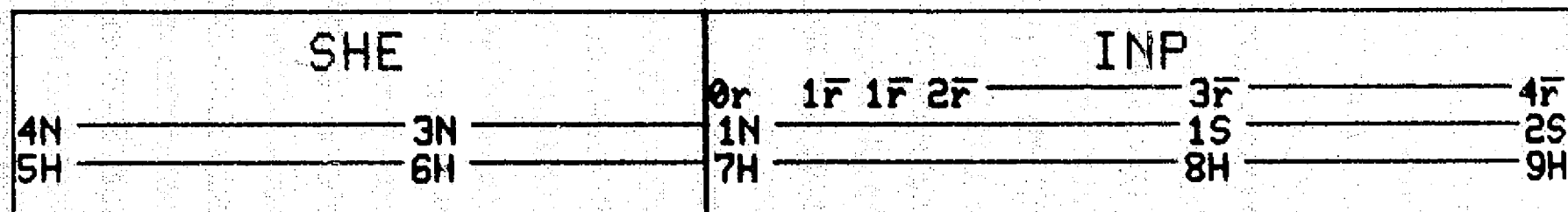


DAY 28 1977

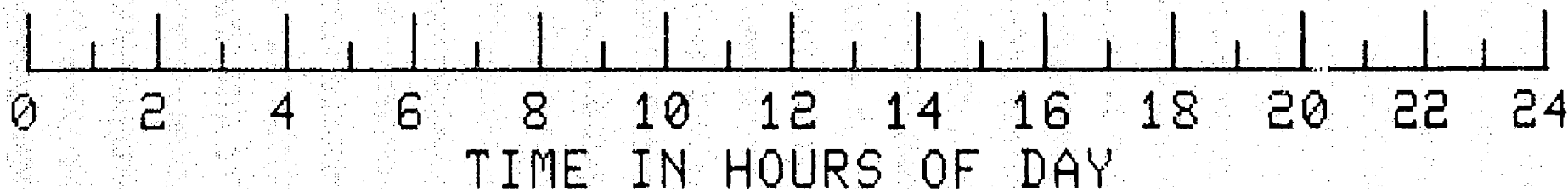
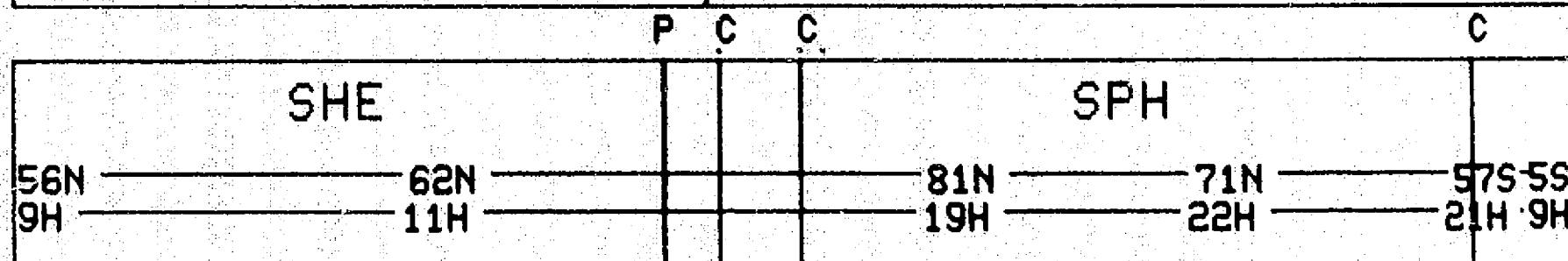
SOL
RAD
-11A



SOL
RAD
-11B

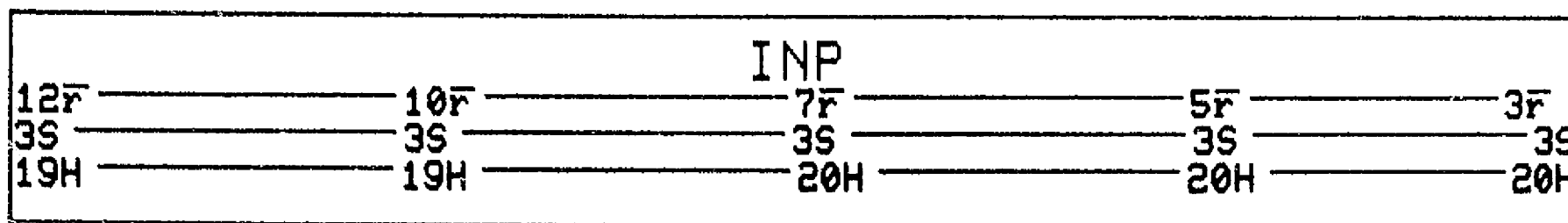


HAWK
EYE-1

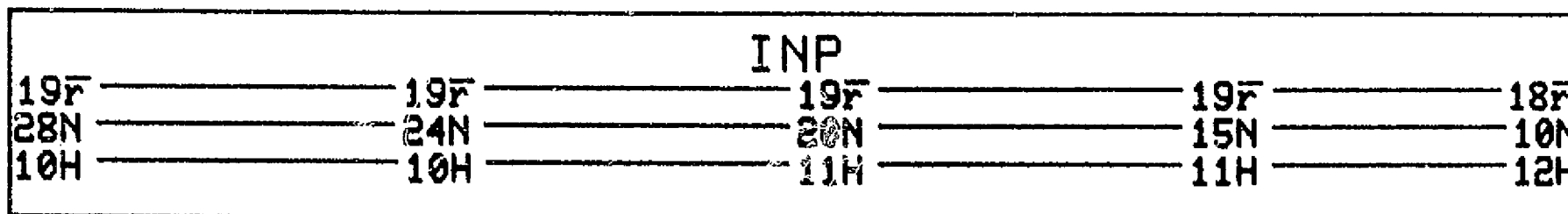


DAY 29 1977

MOON

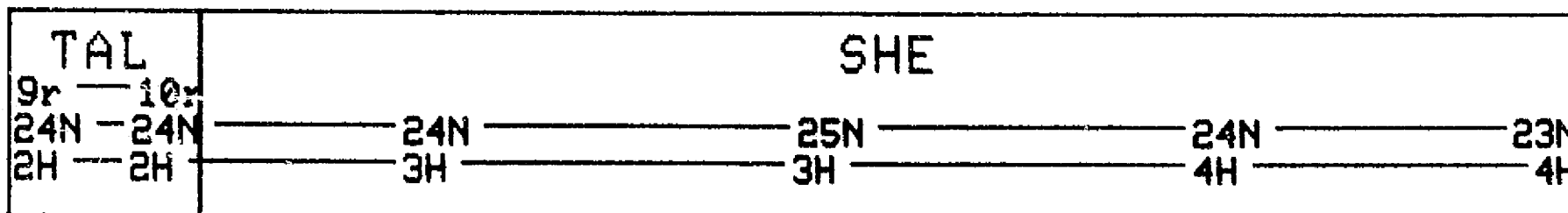


IMP-J



P

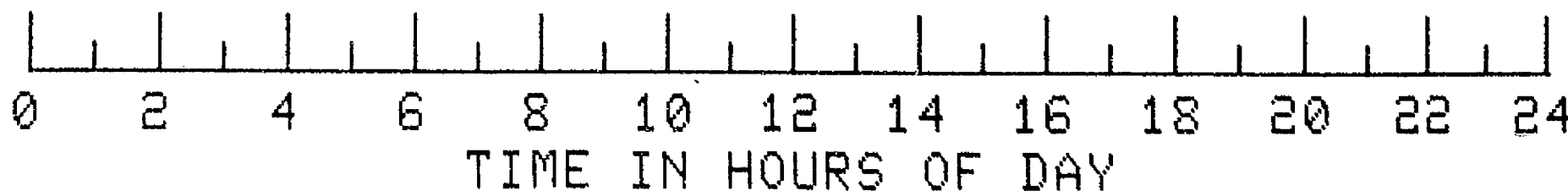
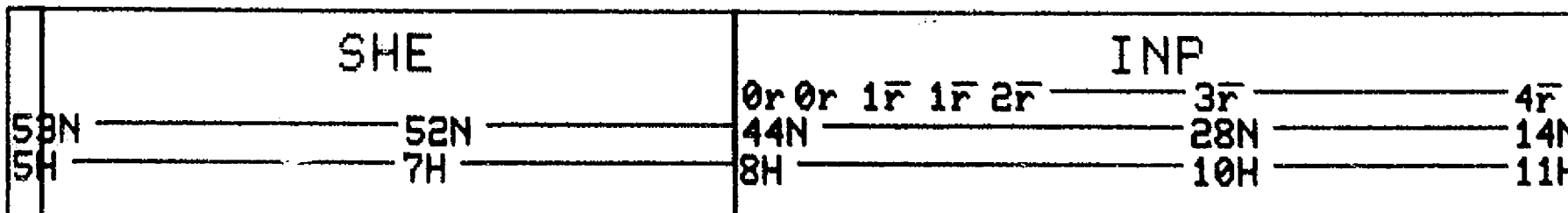
IMP-H



P

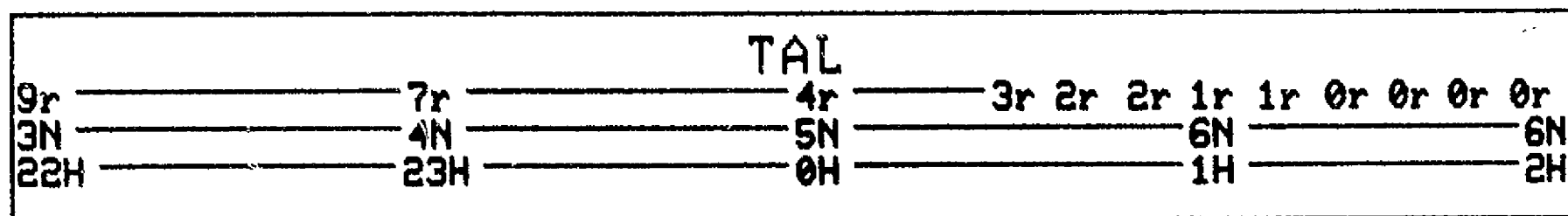
S

VELA
-5B

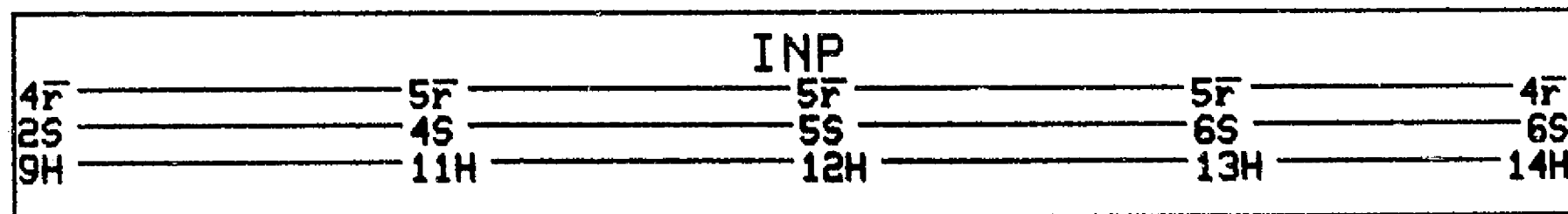


DAY 29 1977

SOL
RAD
-11A

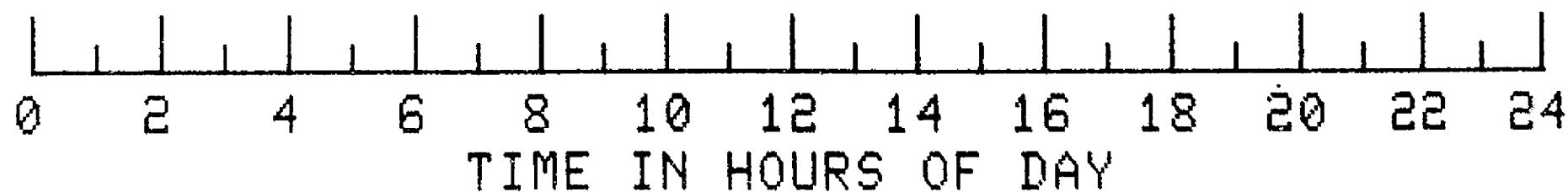
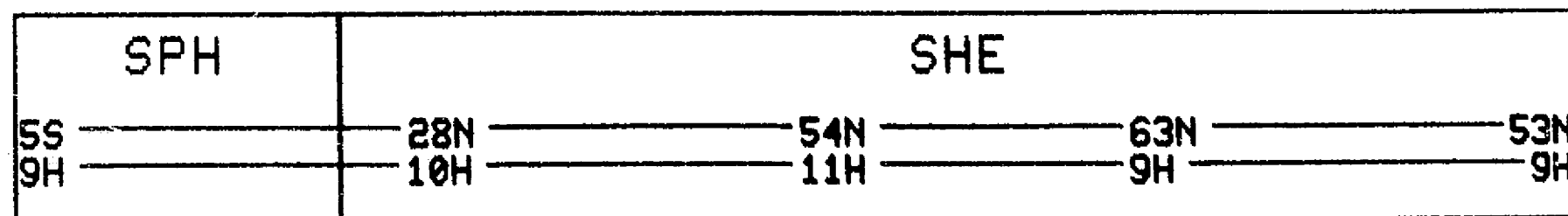


SOL
RAD
-11B



P

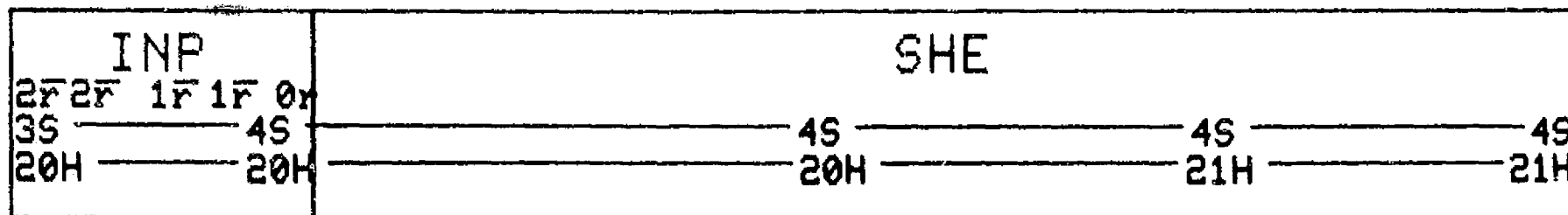
HAWK
EYE-1



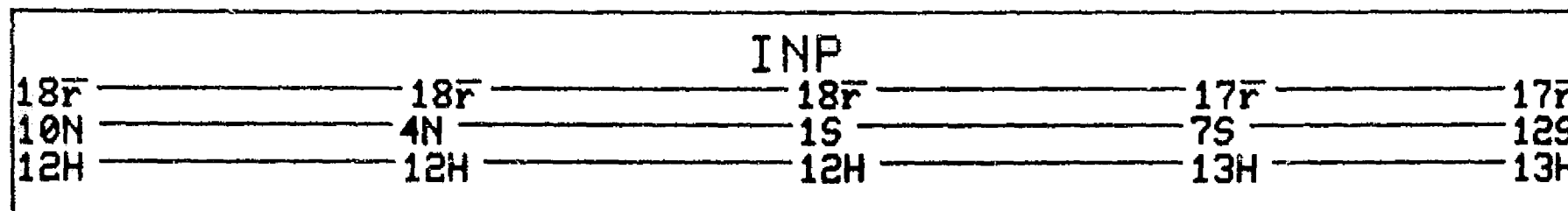
DAY 30 1977

S

MOON

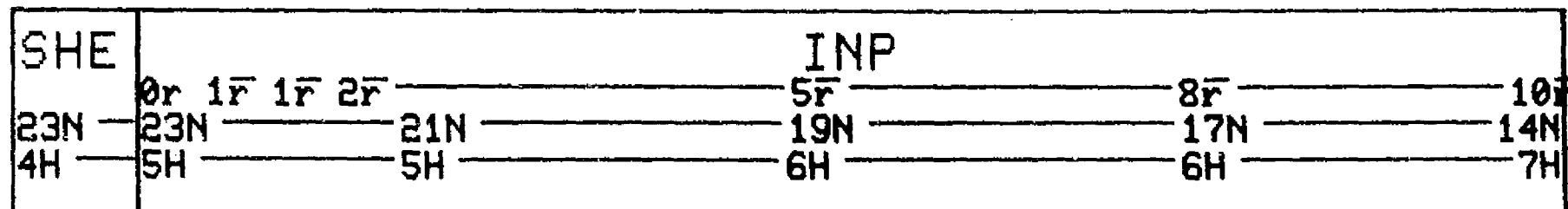


IMP-J

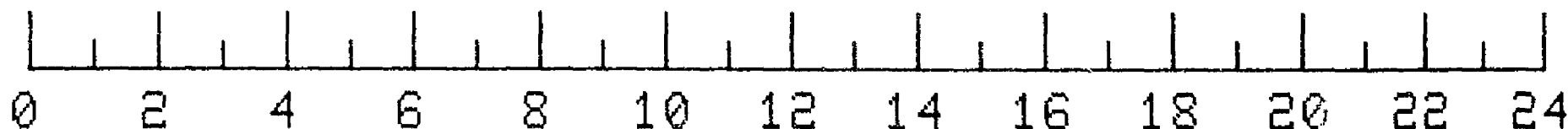
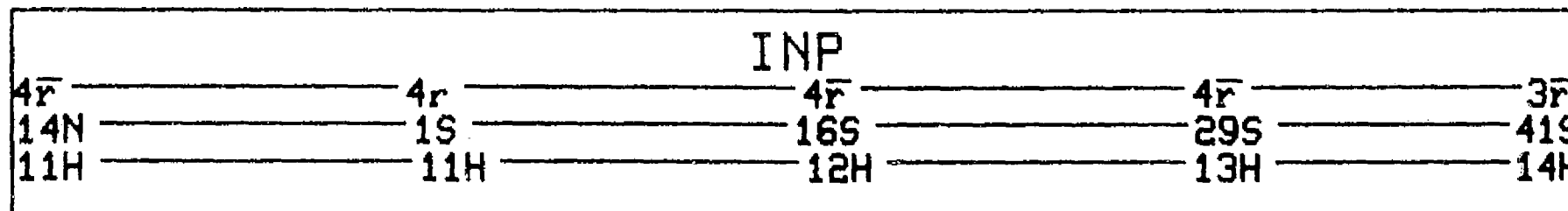


S

IMP-H

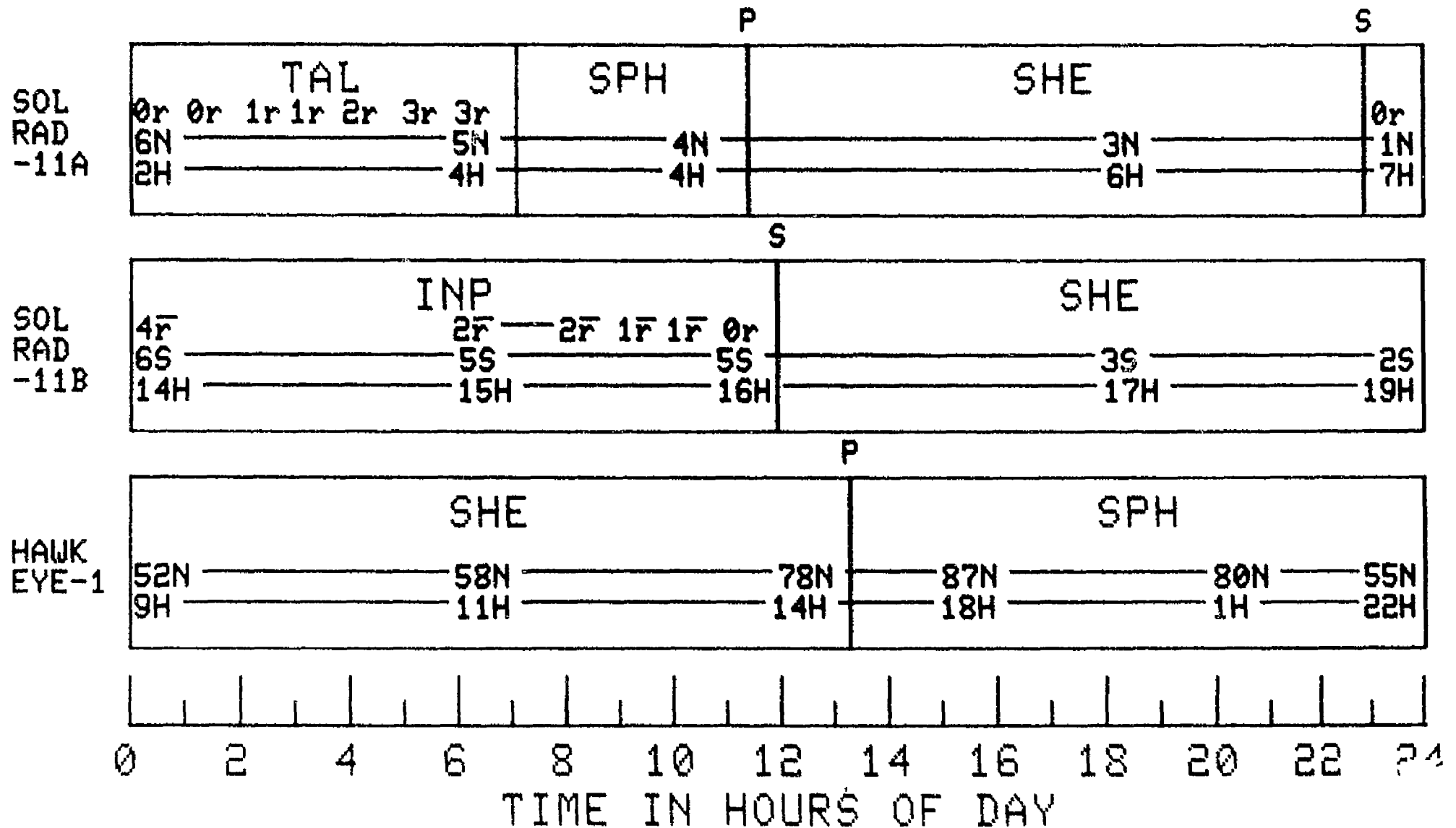


VELA
-5B



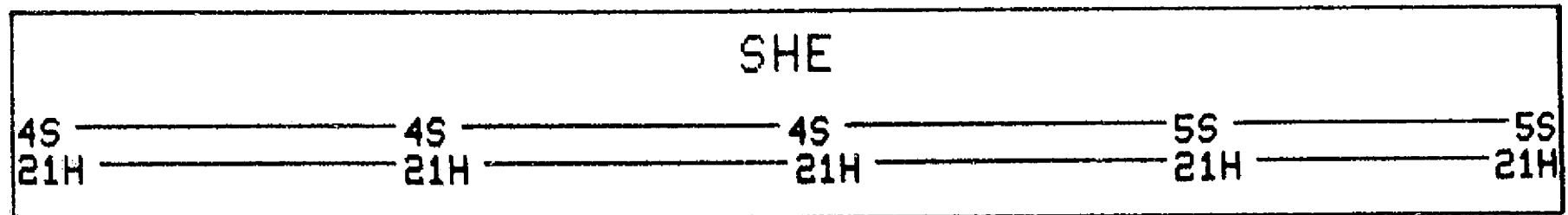
TIME IN HOURS OF DAY

DAY 30 1977

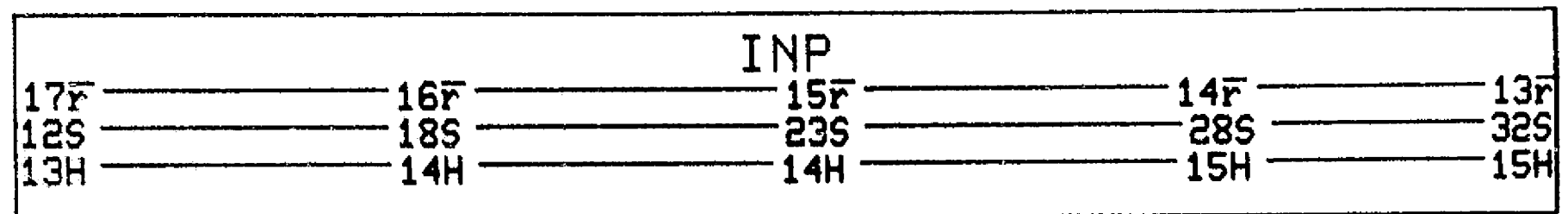


DAY 31 1977

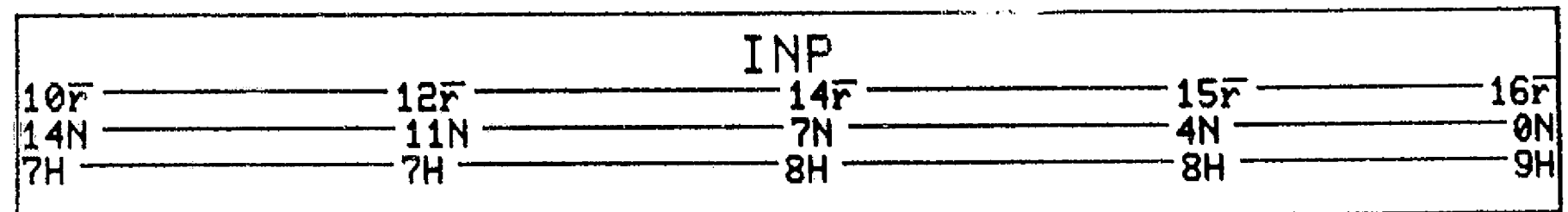
MOON



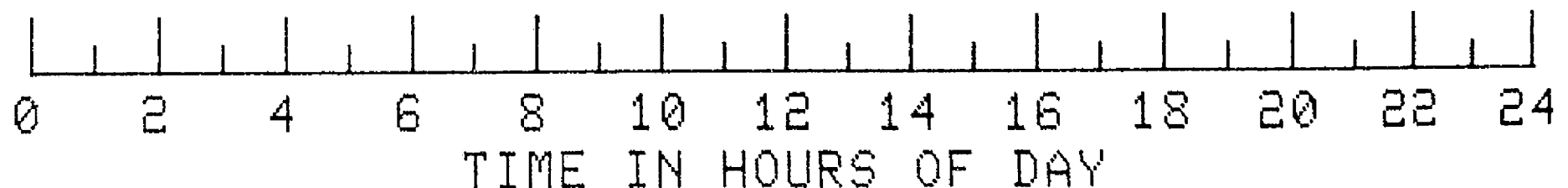
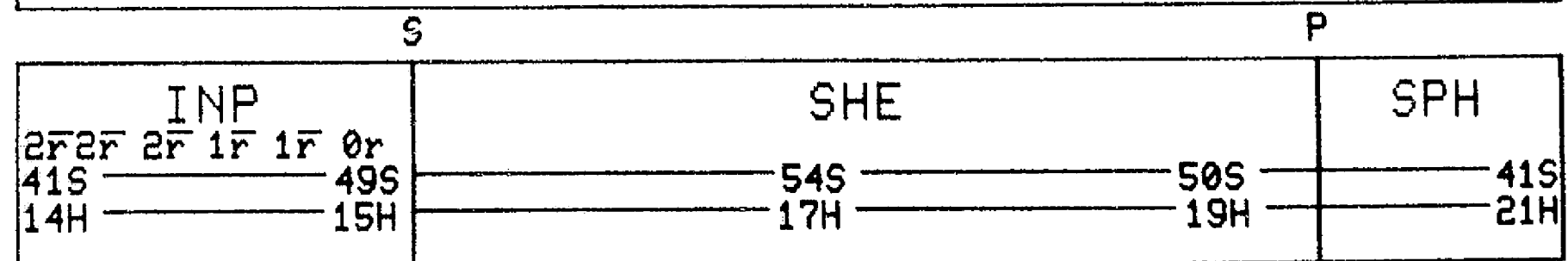
IMP-J



IMP-H

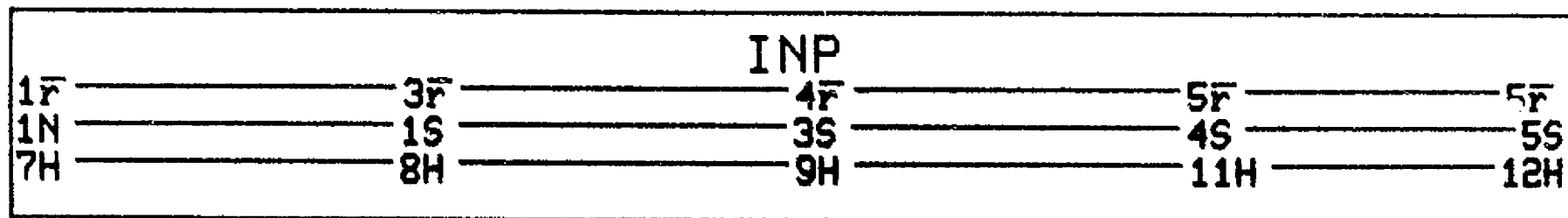


VELA
-5B



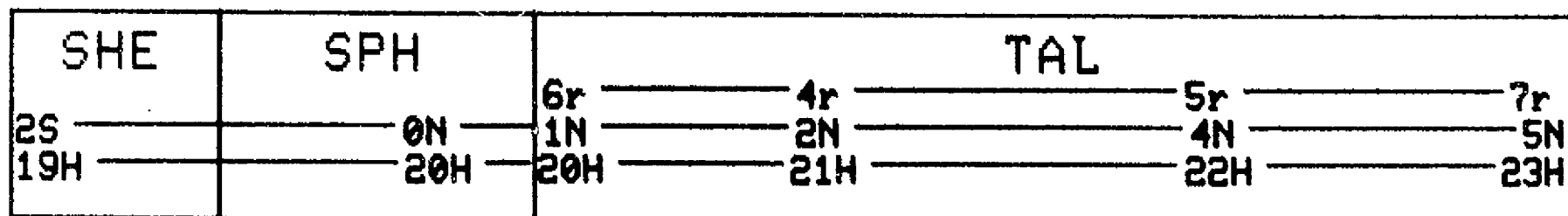
DAY 31 1977

SOL
RAD
-11A



P

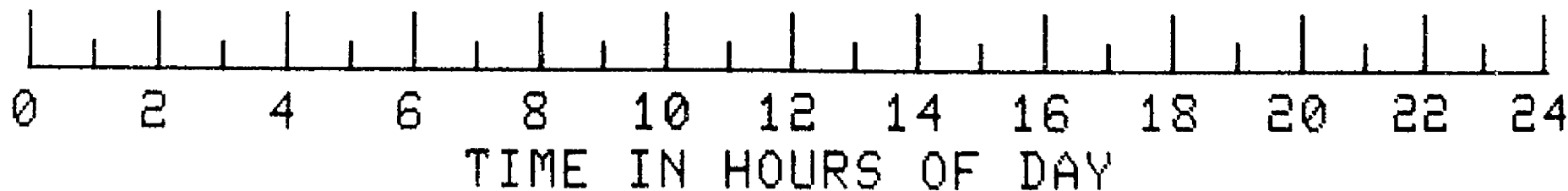
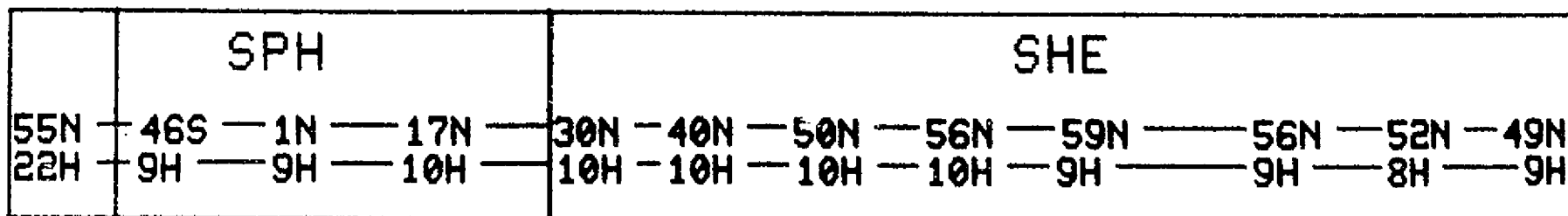
SOL
RAD
-11B



C

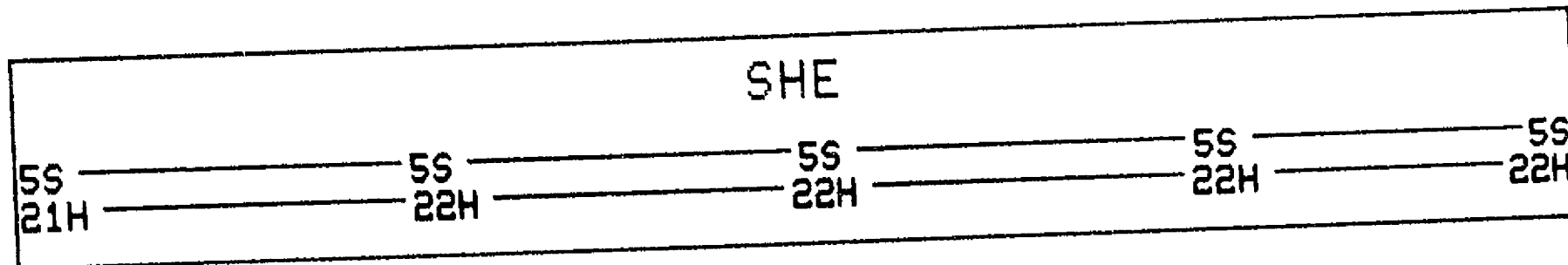
P

HAWK
EYE-1

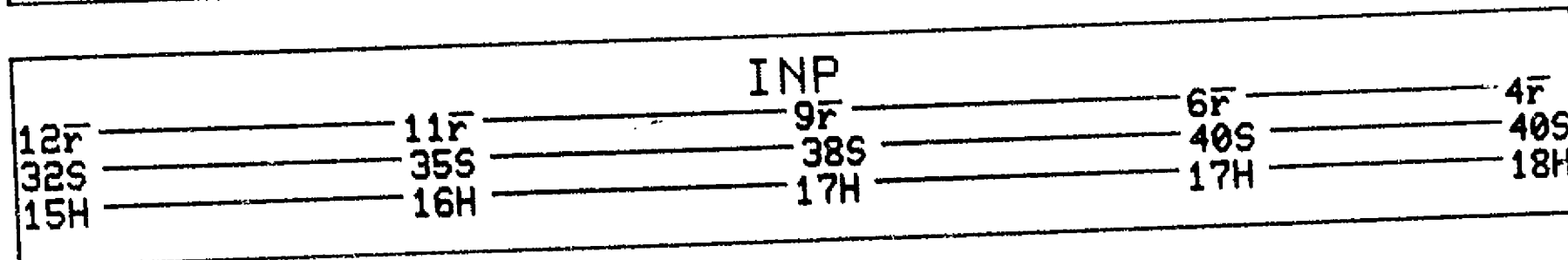


DAY 32 1977

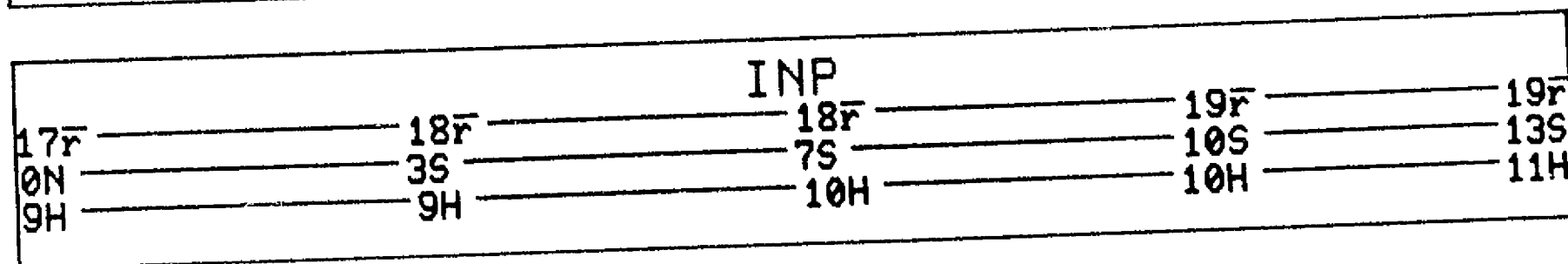
MOON



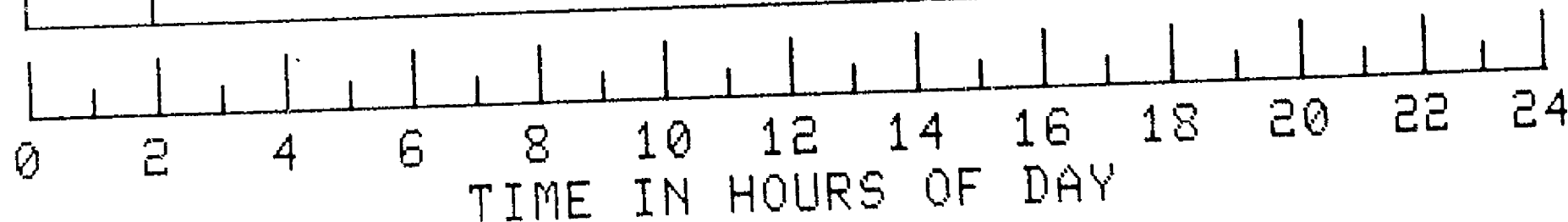
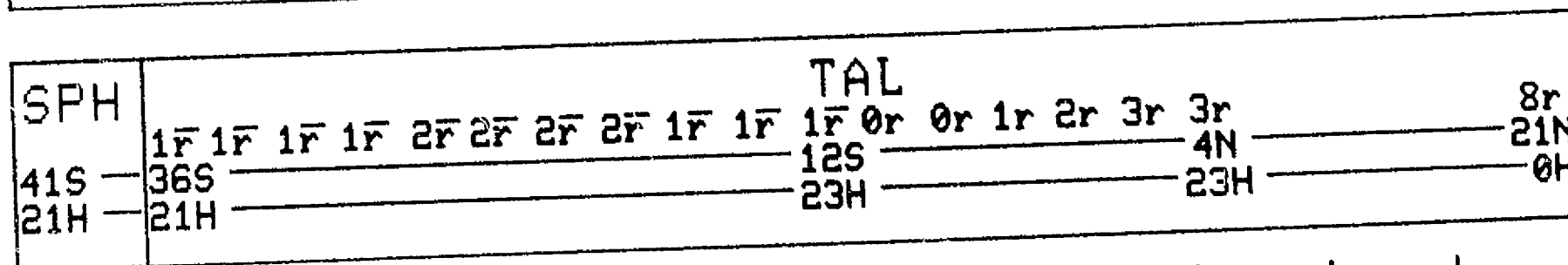
IMP-J



IMP-H



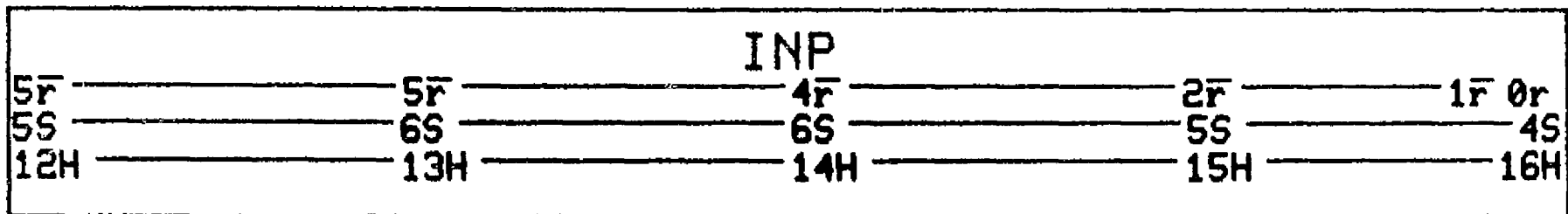
VELA
-5B



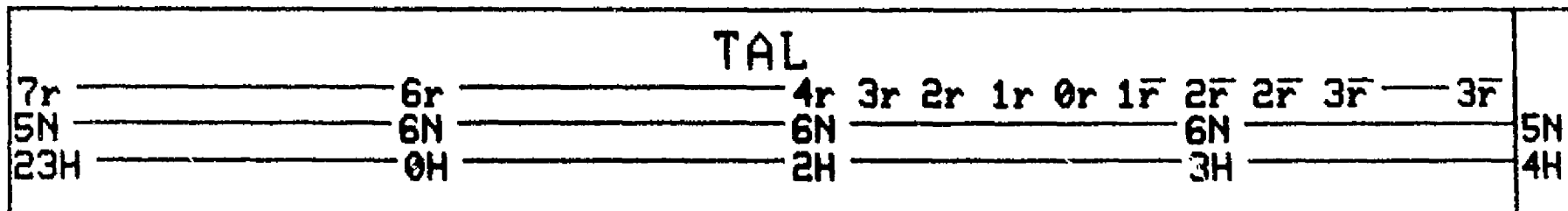
DAY 32 1977

S

SOL
RAD
-11A

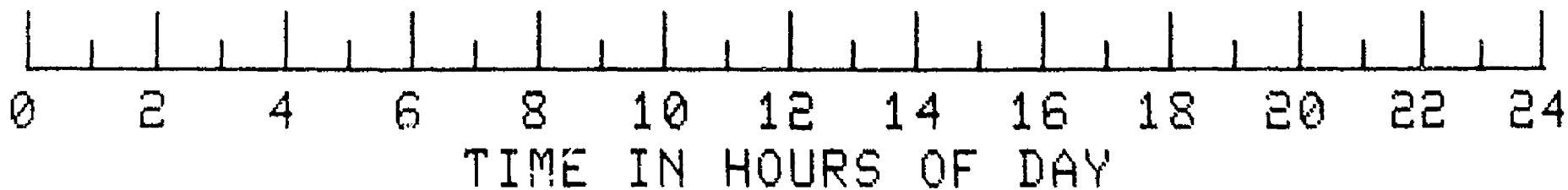
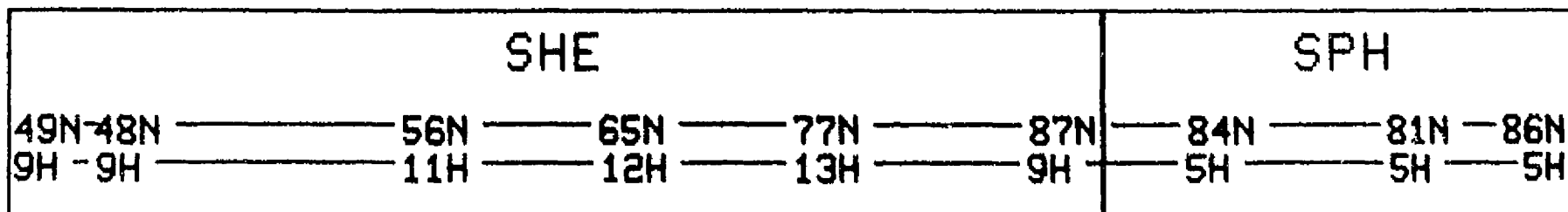


SOL
RAD
-11B



P

HAWK
EYE-1



I

DAY 33 1977

P

MOON

| SHE | | | | TAL | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 5S | 5S | 5S | 5S | 0r | 1r | 1r | 0r | 0r | 1r |
| 22H | 22H | 22H | 22H | 23H | 23H | 23H | 23H | 23H | 23H |

S

IMP-J

| INP | | | | SHE | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 3r | 2r | 1r | 1r | 38S | 36S | 33S | 33S |
| 40S | 40S | 40S | 40S | 19H | 20H | 21H | 21H |

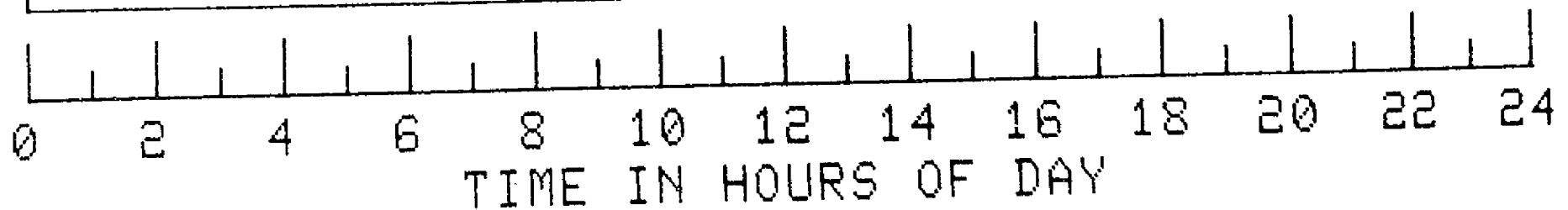
IMP-H

| INP | | | | INP | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|
| 20r | 20r | 20r | 20r | 21r | 21r | 21r | 21r |
| 13S | 15S | 18S | 20S | 12H | 12H | 13H | 13H |

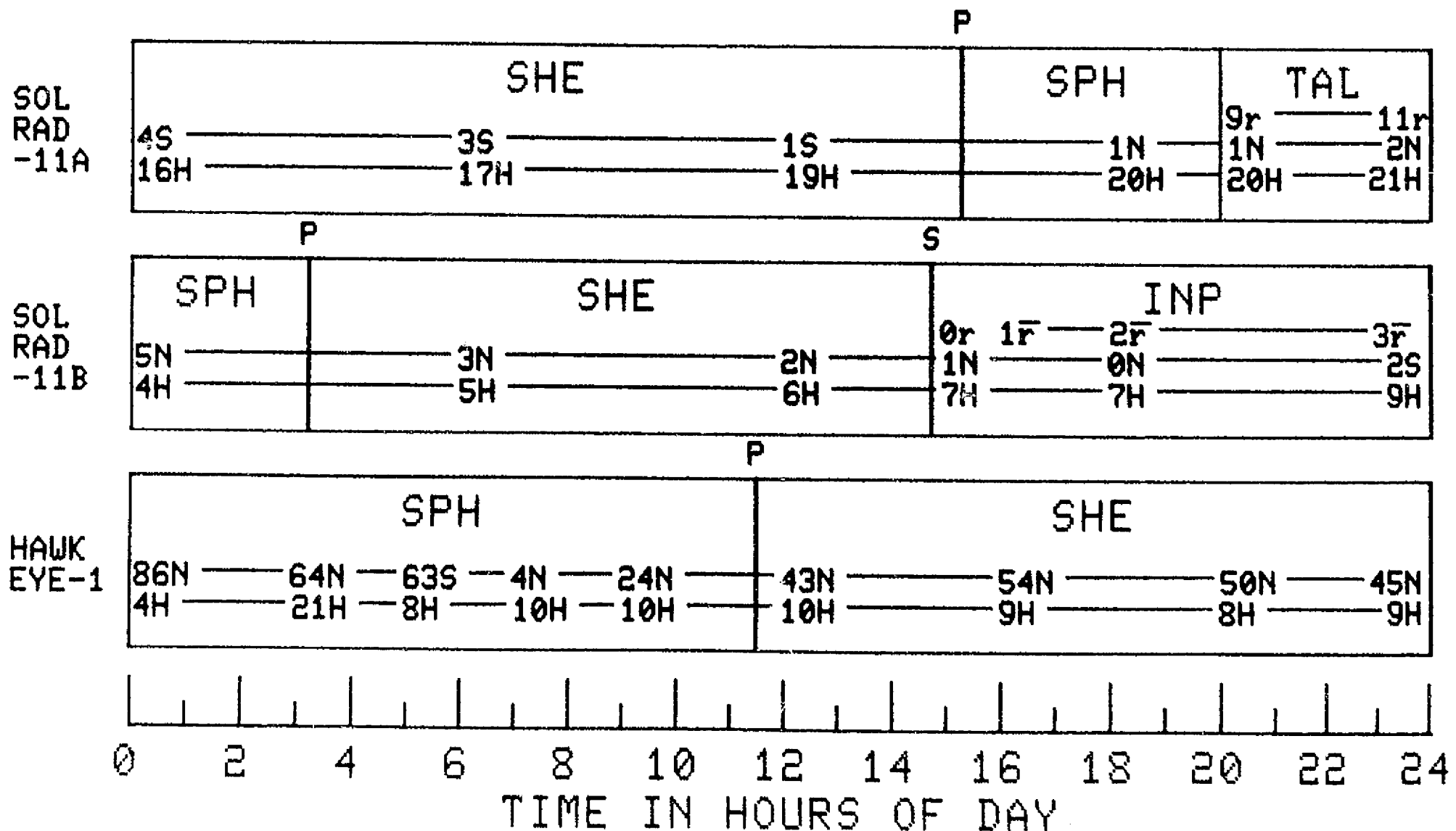
P

UEIA
-5B

| TAL | | | SPH | | SHE | |
|-----|-----|-----|-----|-----|-----|-----|
| 9r | 14r | 15r | 54N | 49N | 54N | 49N |
| 21N | 37N | 43N | 5H | 7H | 5H | 7H |

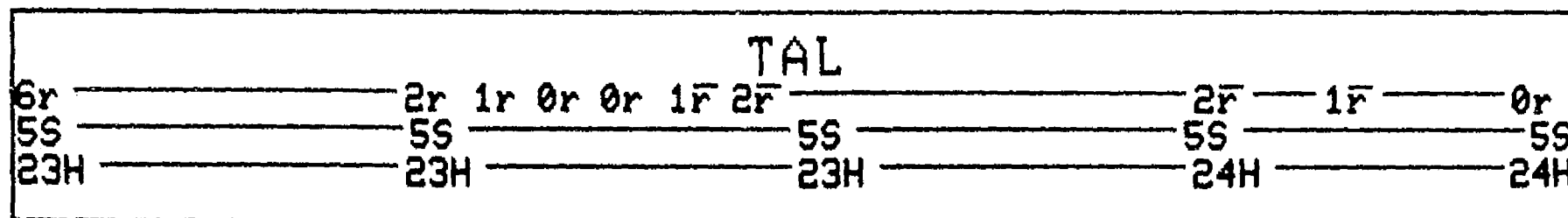


DAY 33 1977



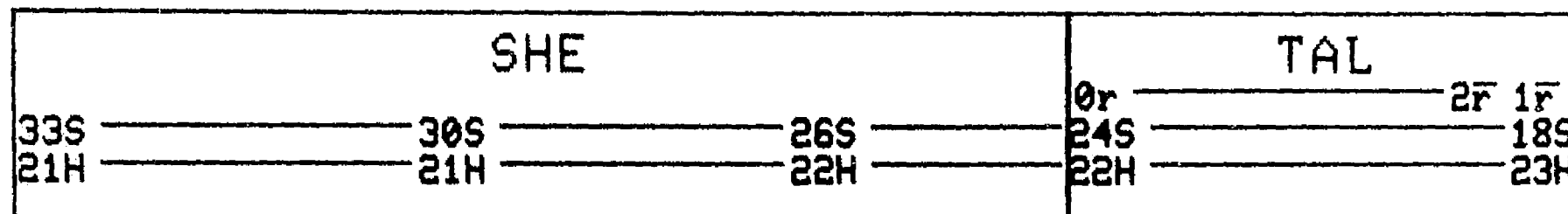
DAY 34 1977

100N

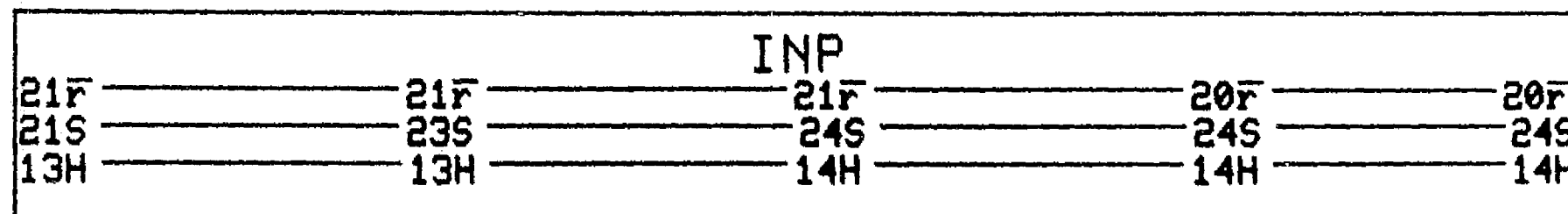


P

IMP-J

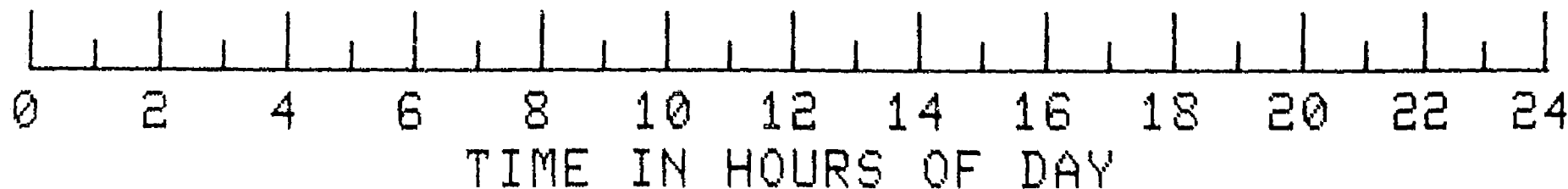
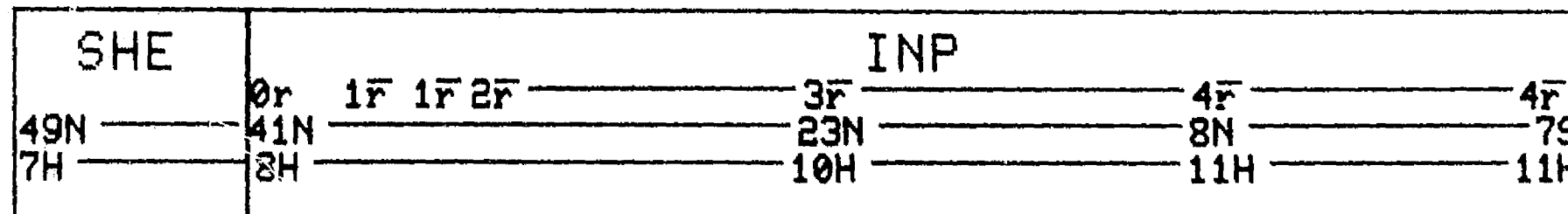


IMP-H



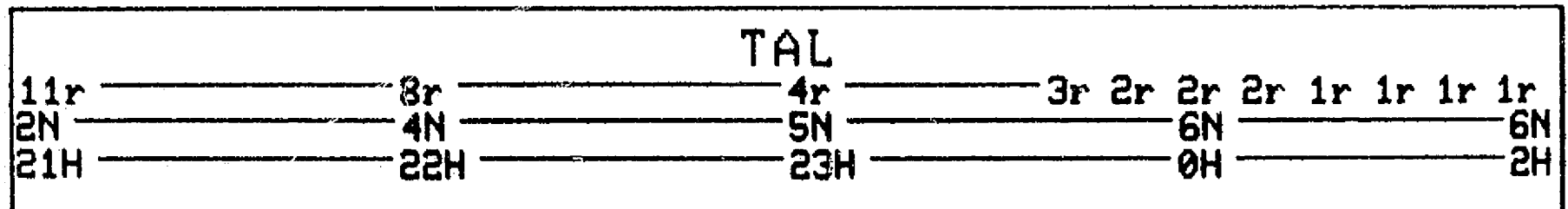
S

VELA
-5B

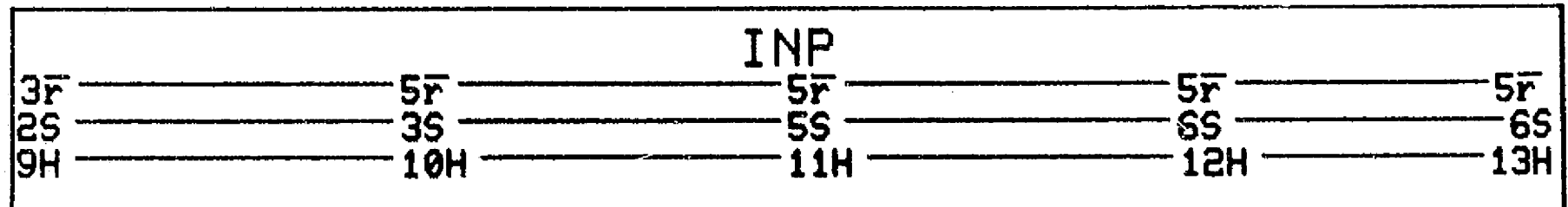


DAY 34 1977

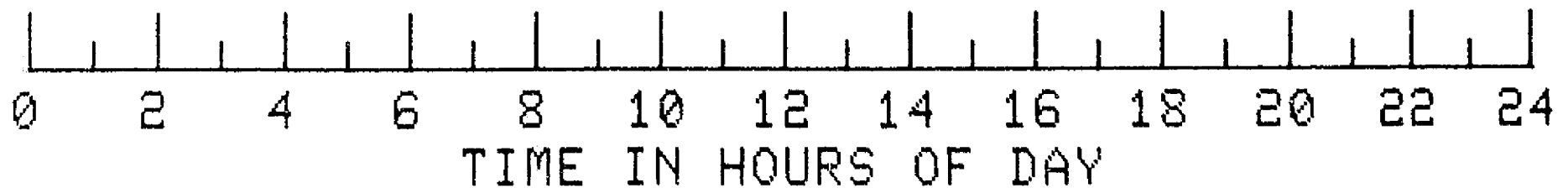
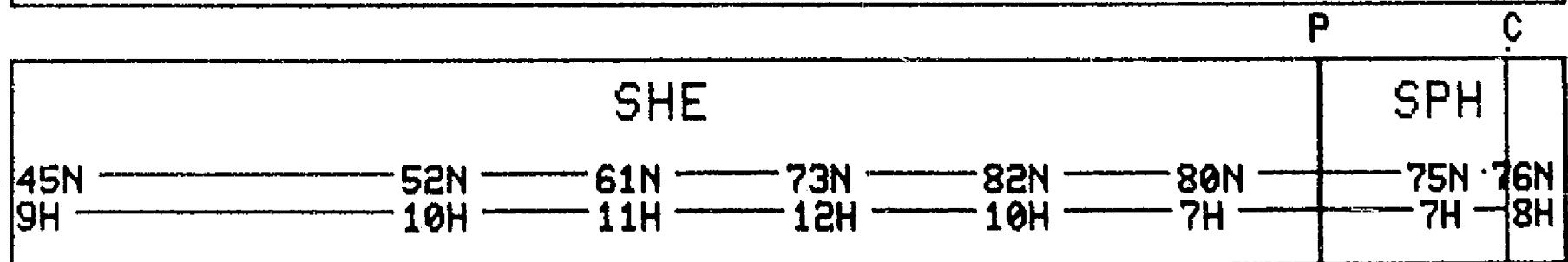
SOL
RAD
-11A



SOL
RAD
-11B

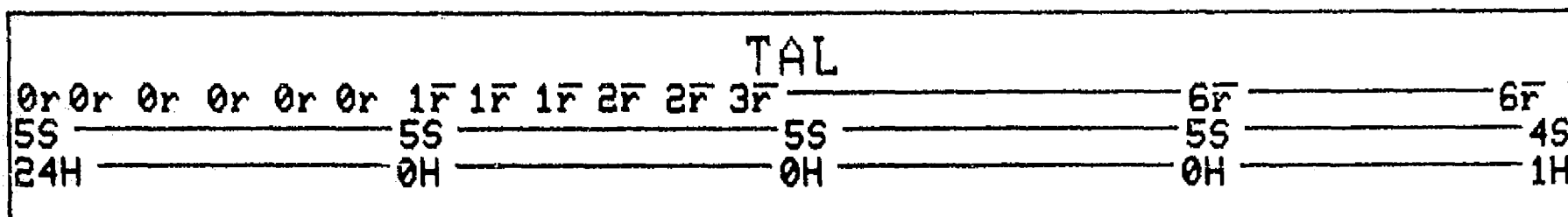


HAWK
EYE-1

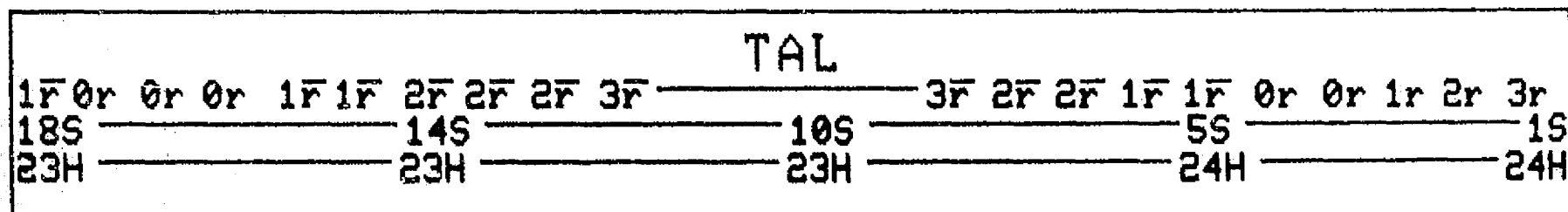


DAY 35 1977

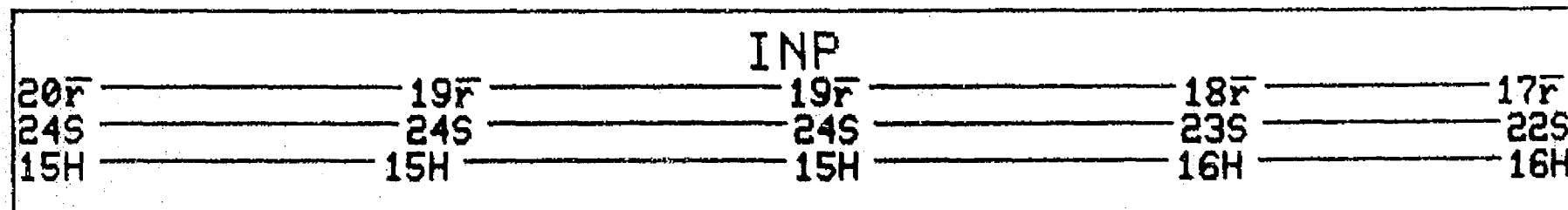
MOON



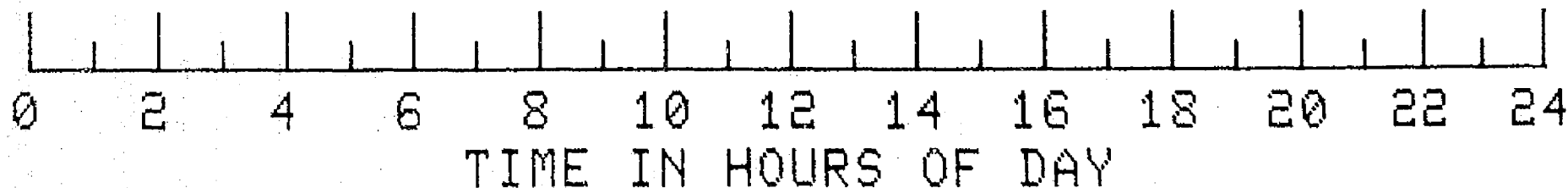
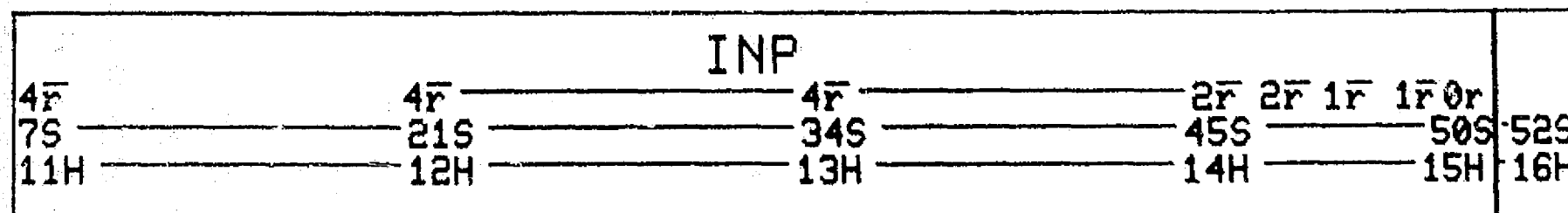
IMP-J



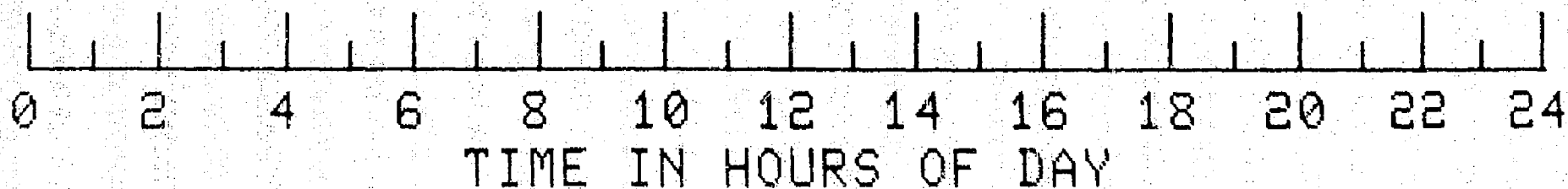
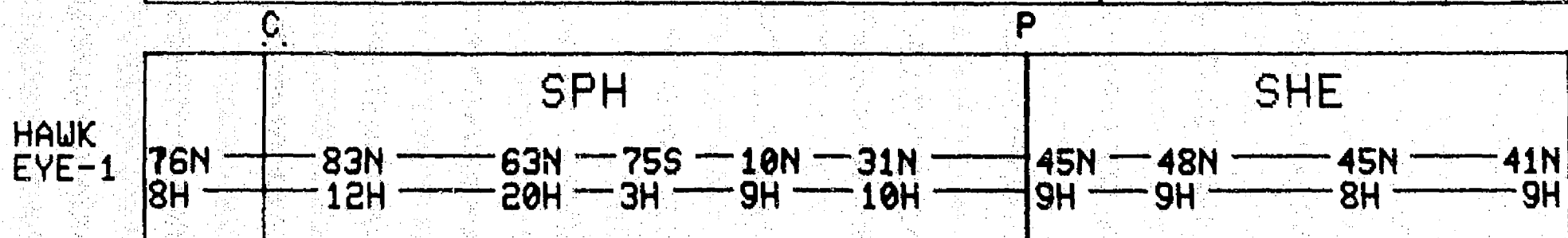
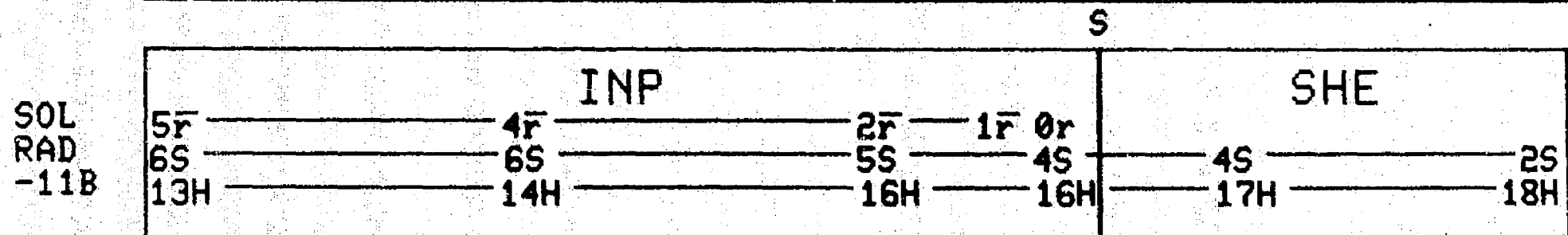
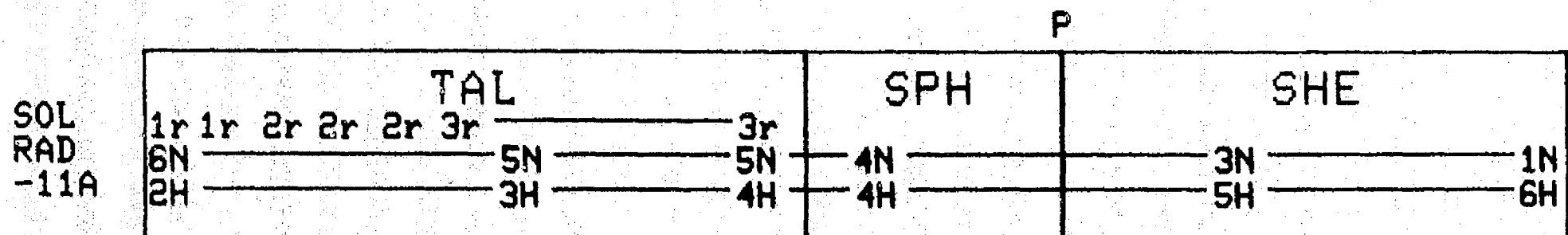
IMP-H



VELA
-5B



DAY 35 1977

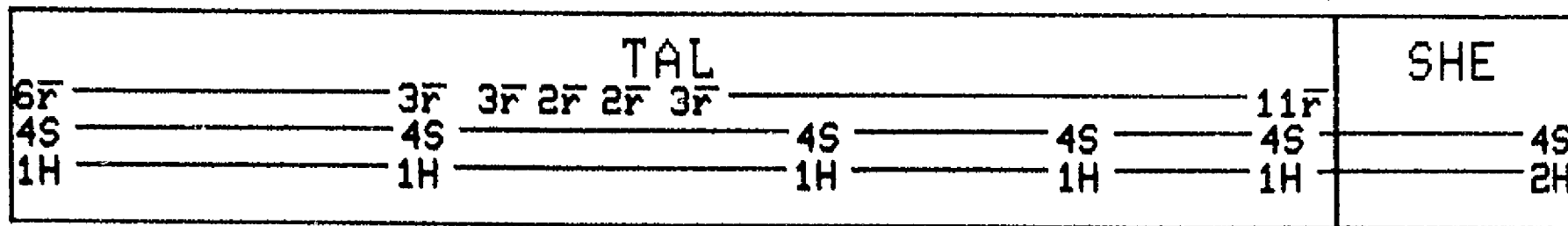


0.2

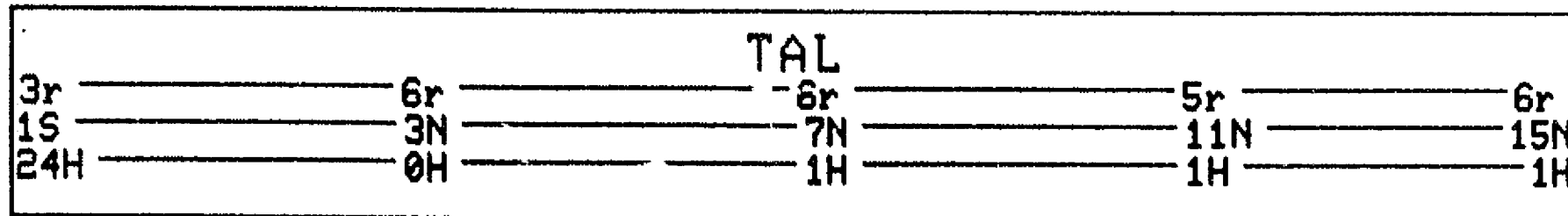
DAY 36 1977

P

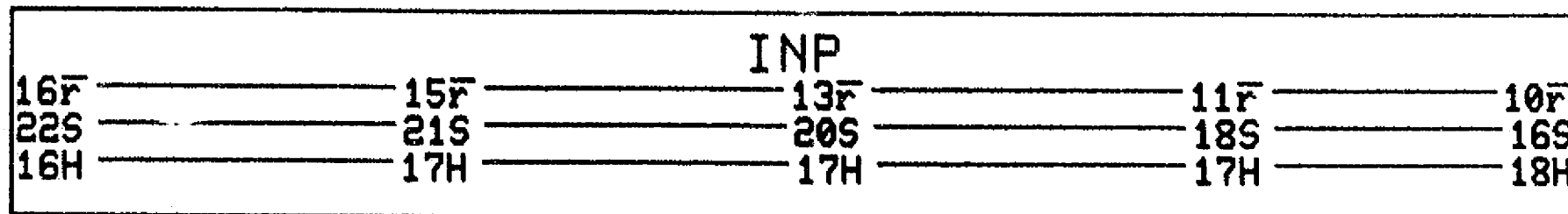
MOON



IMP-J

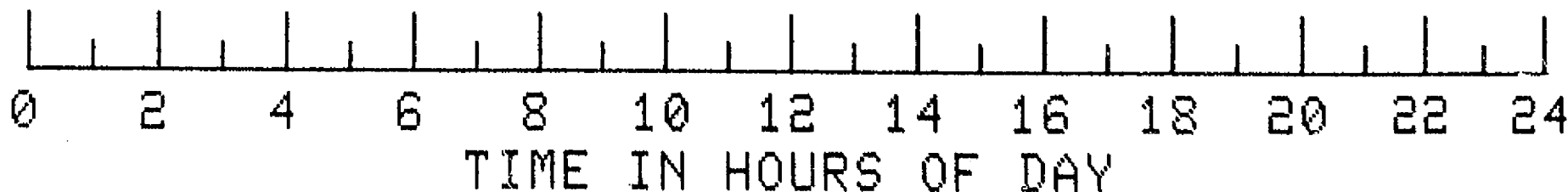
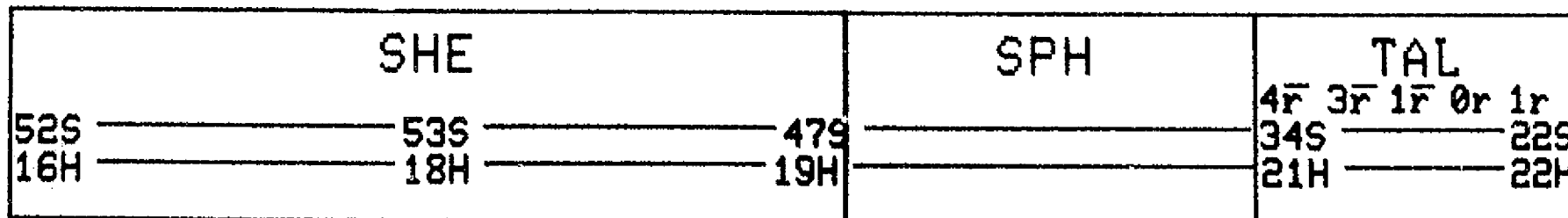


IMP-H

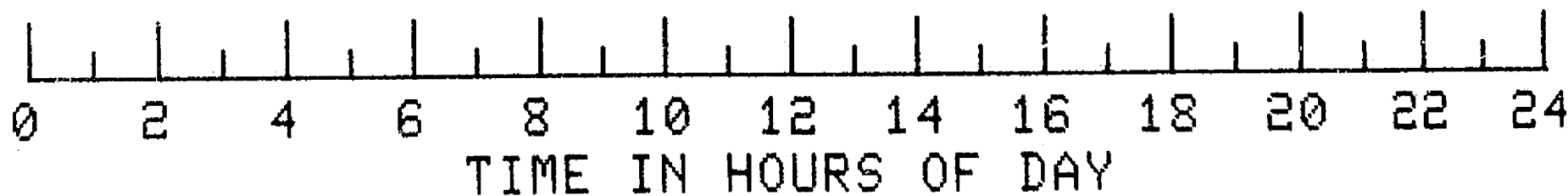
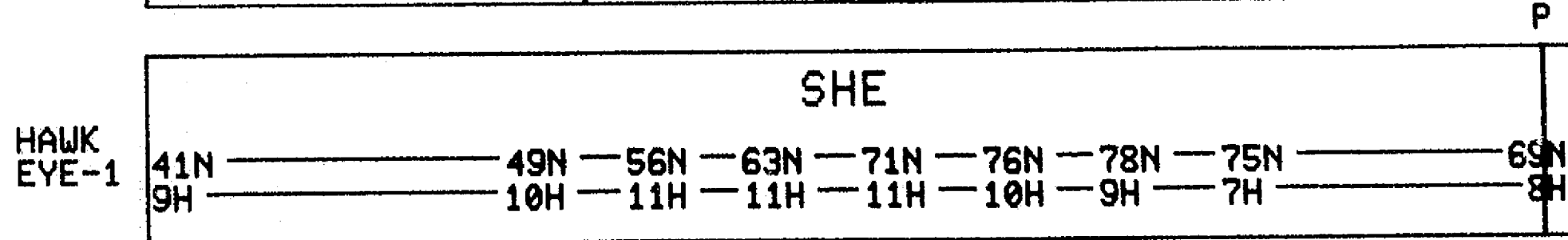
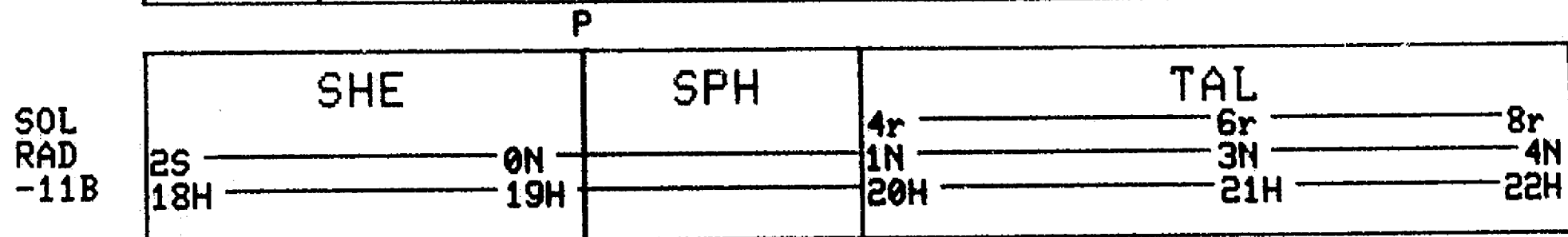
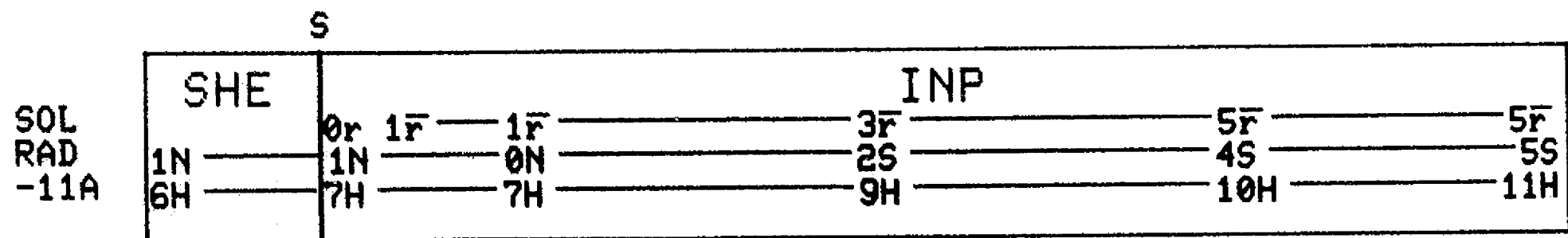


P

VELA
-5B

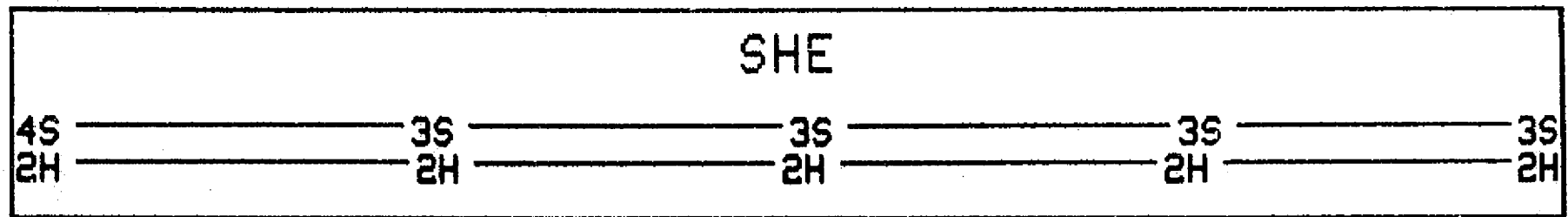


DAY 36 1977



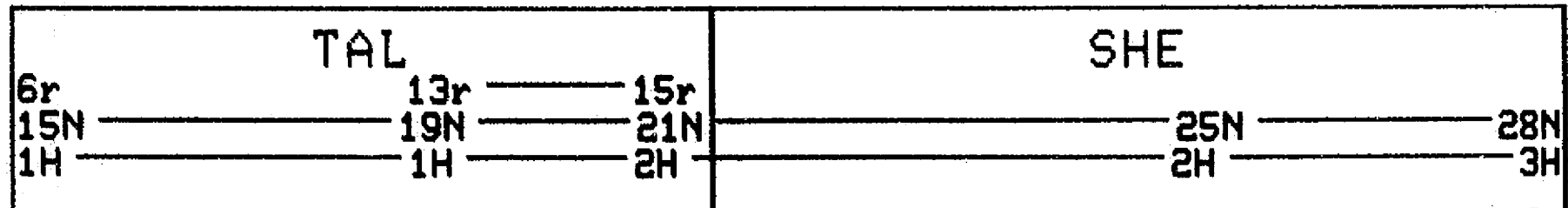
DAY 37 1977

MOON



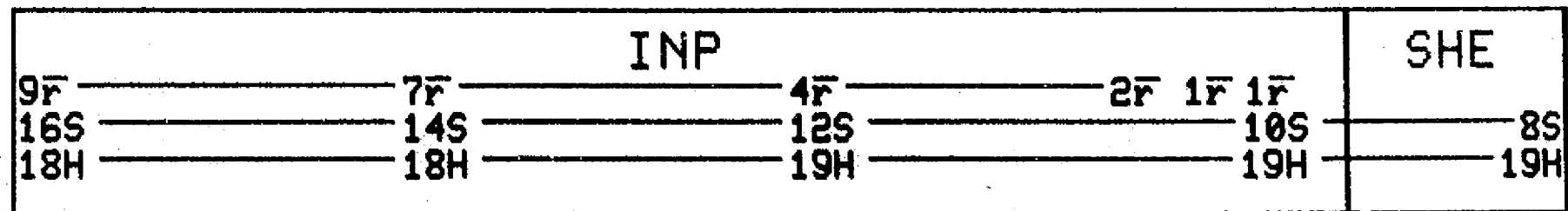
P

IMP-J

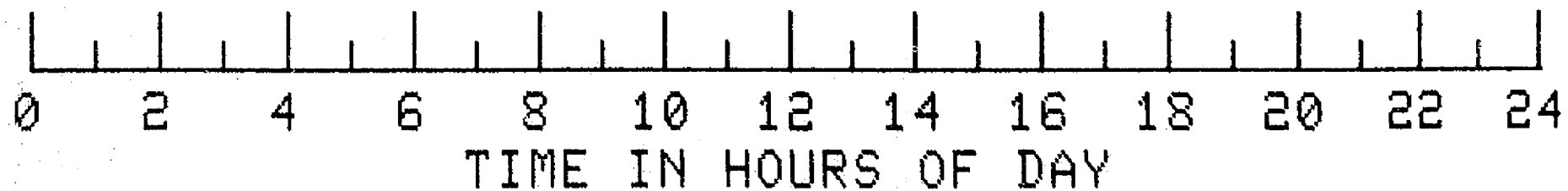
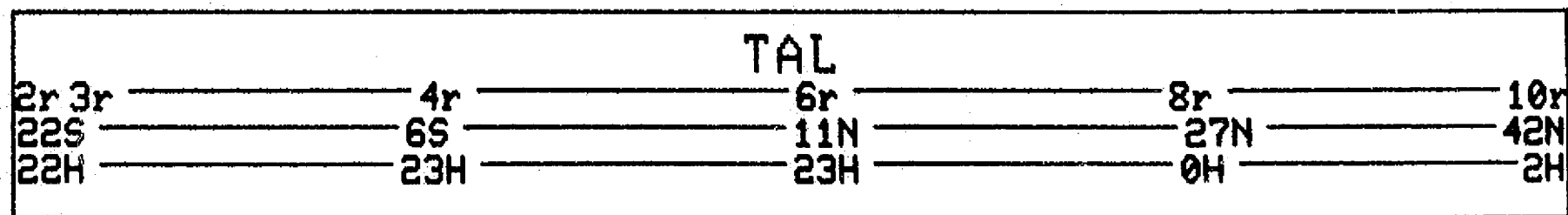


S

IMP-H

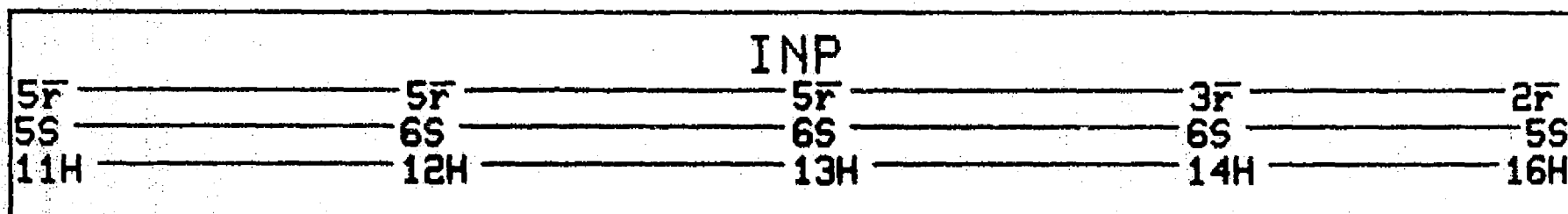


VELA
-5B

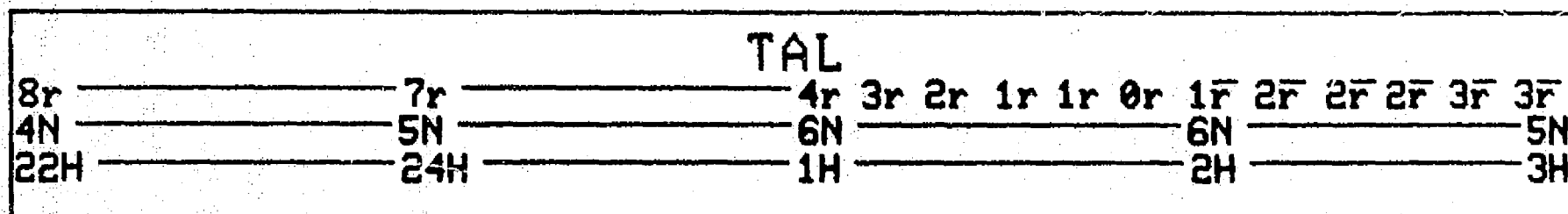


DAY 37 1977

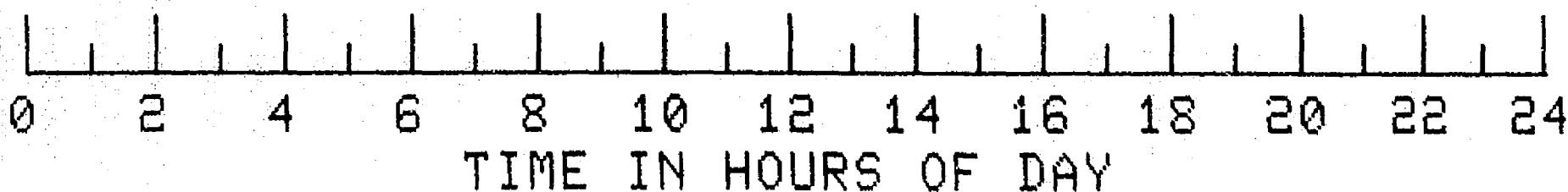
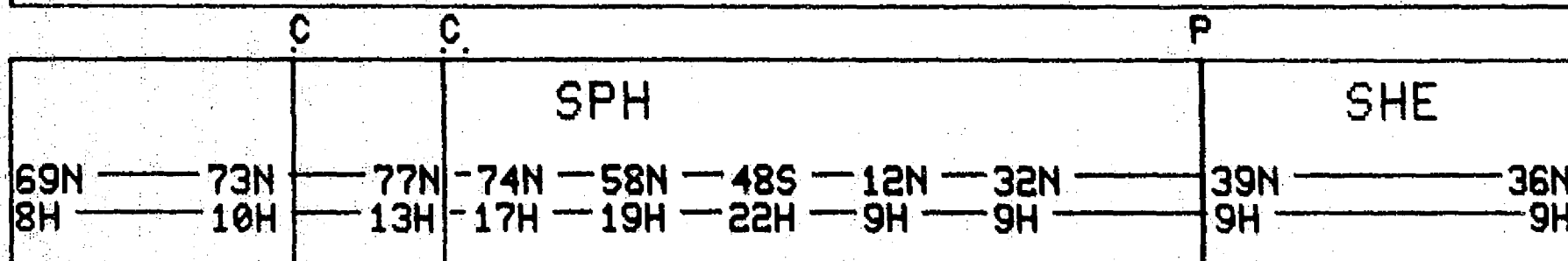
SOL
RAD
-11A



SOL
RAD
-11B

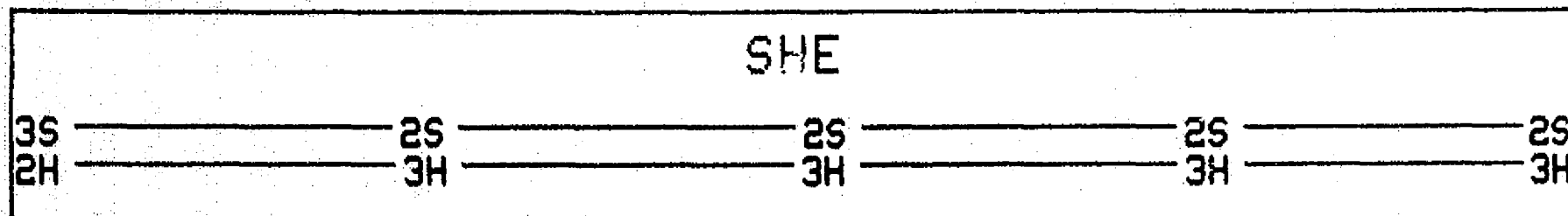


HAWK
EYE-1



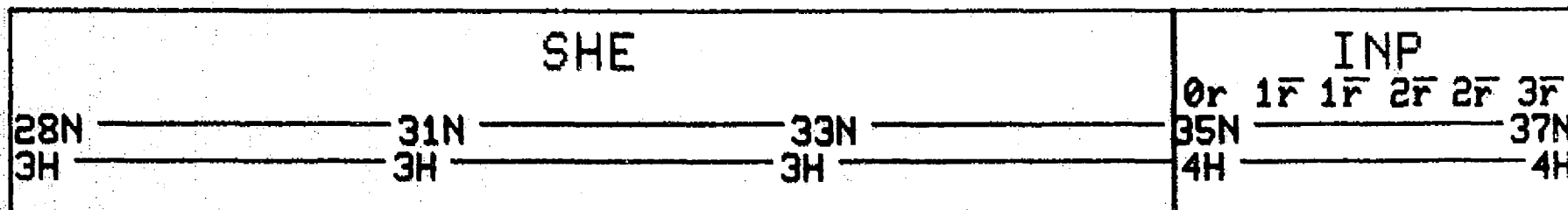
DAY 38 1977

MOON

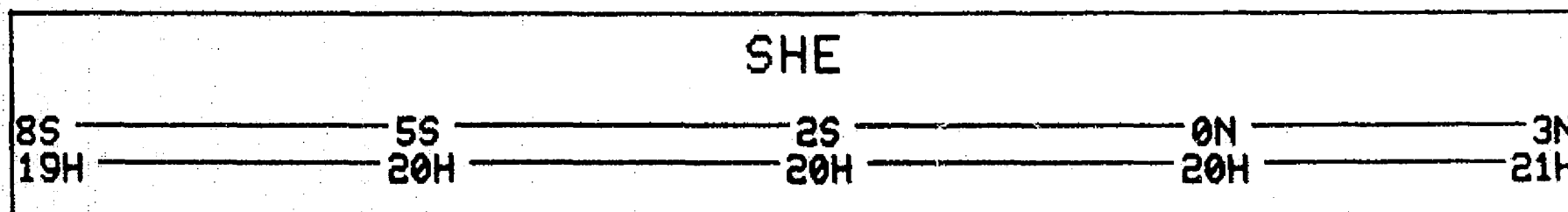


S

IMP-J



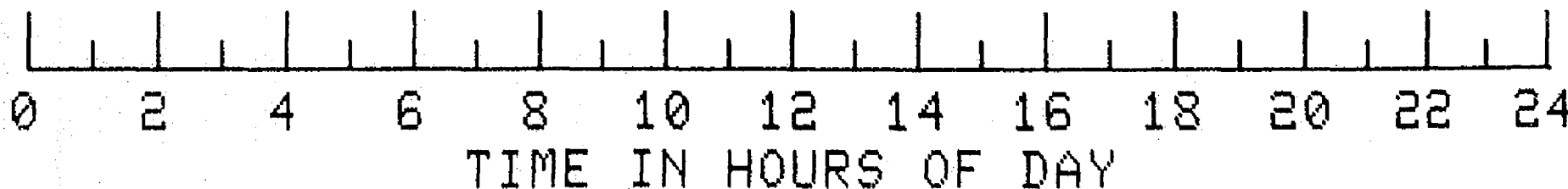
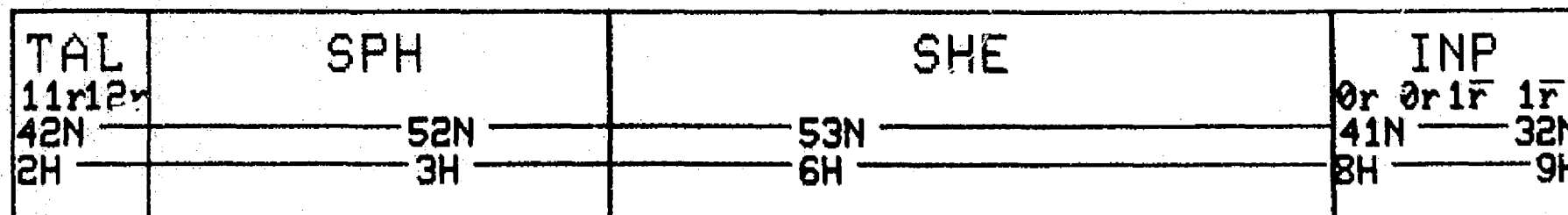
IMP-H



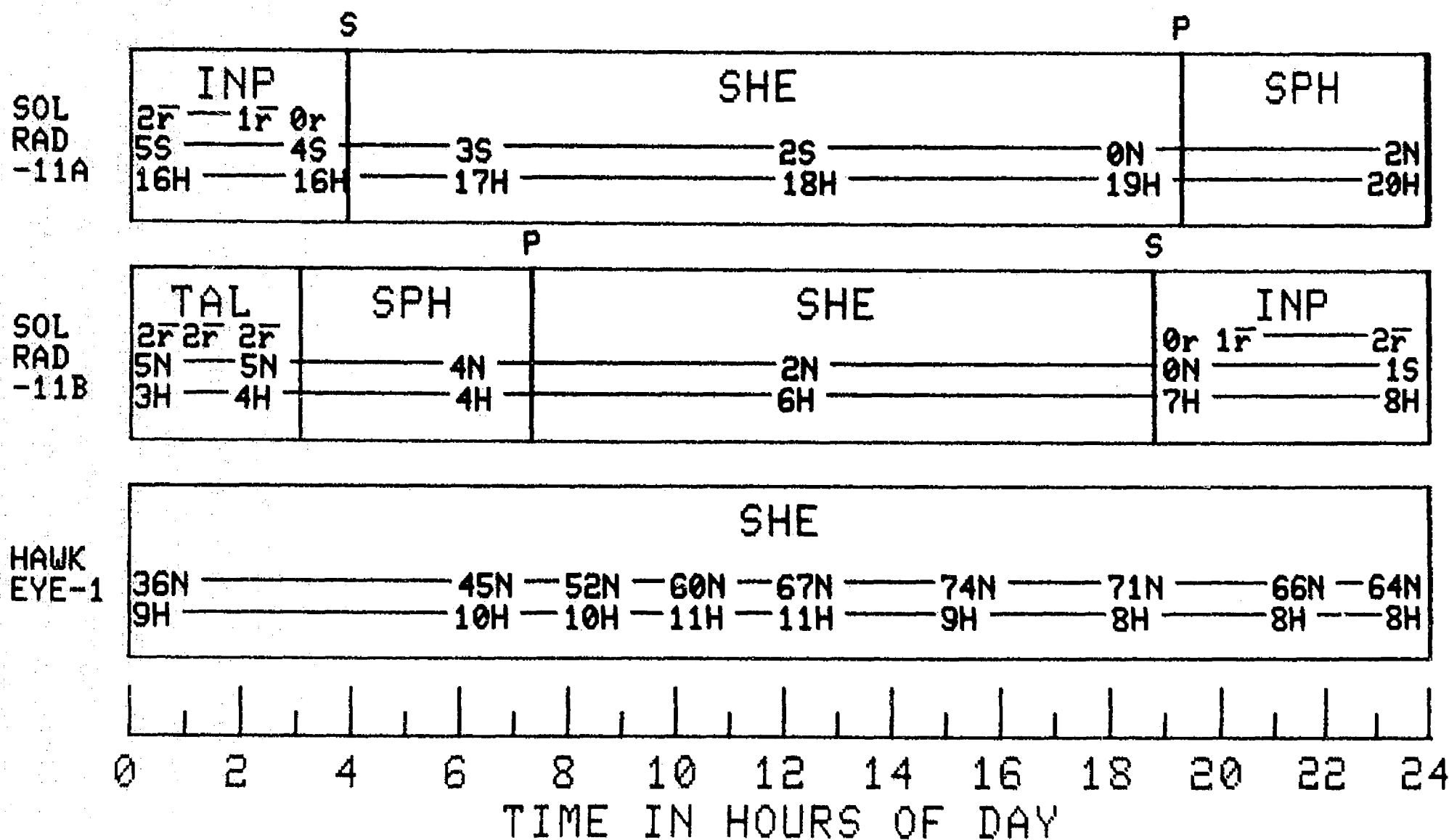
P

S

VELA
-5B



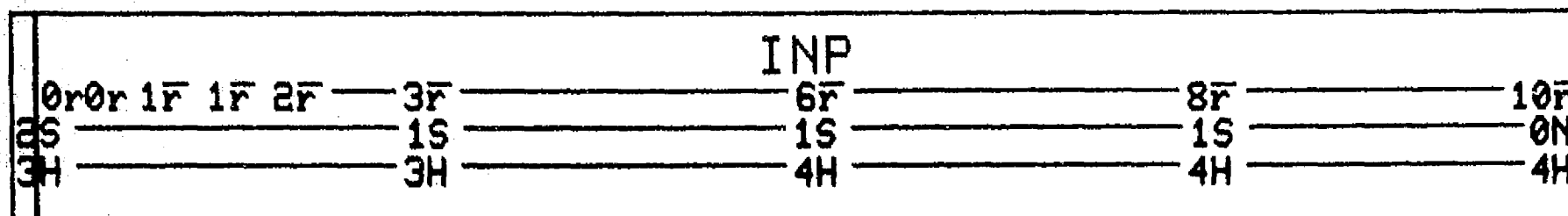
DAY 38 1977



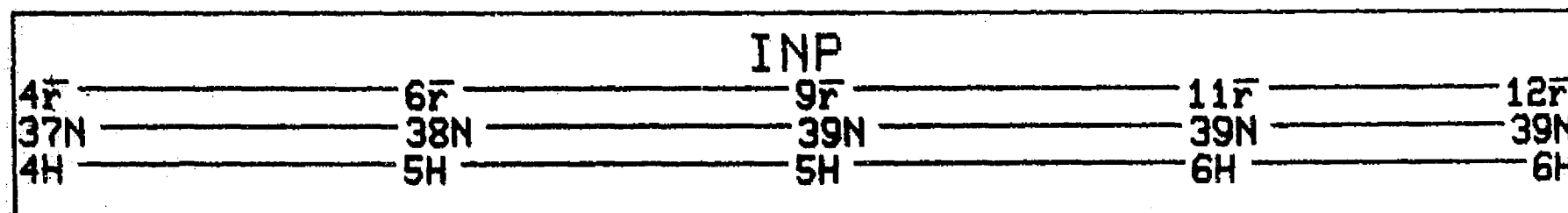
DAY 39 1977

S

MOON

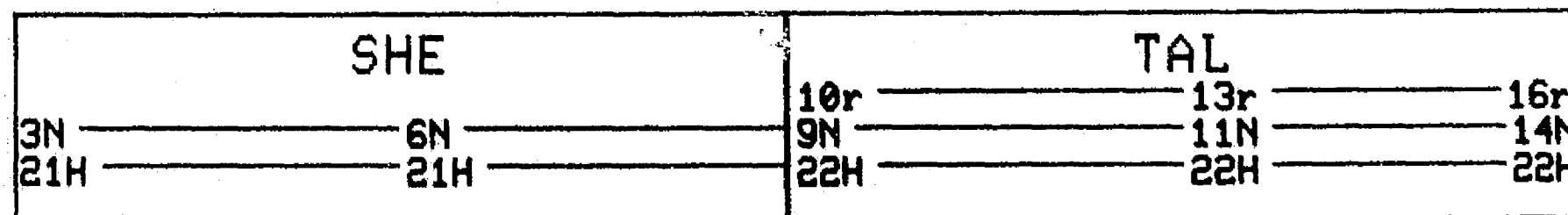


IMP-J

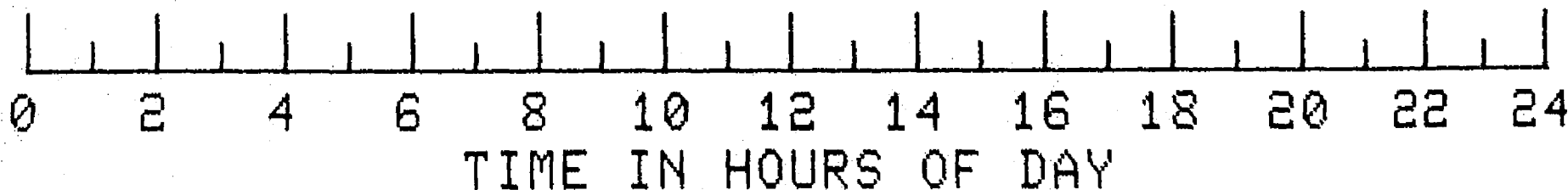
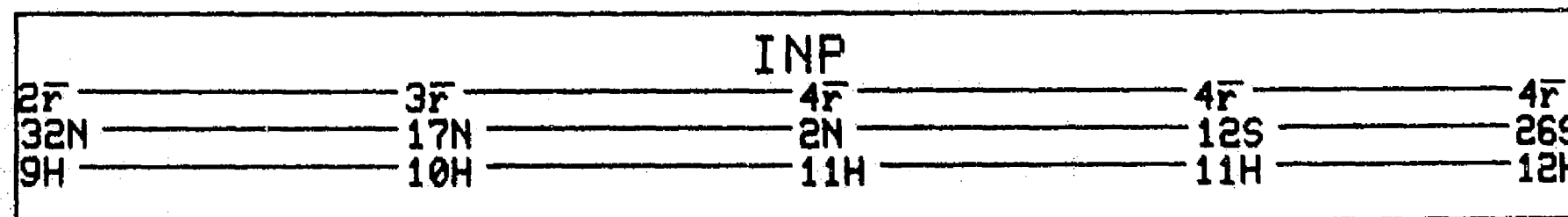


P

IMP-H

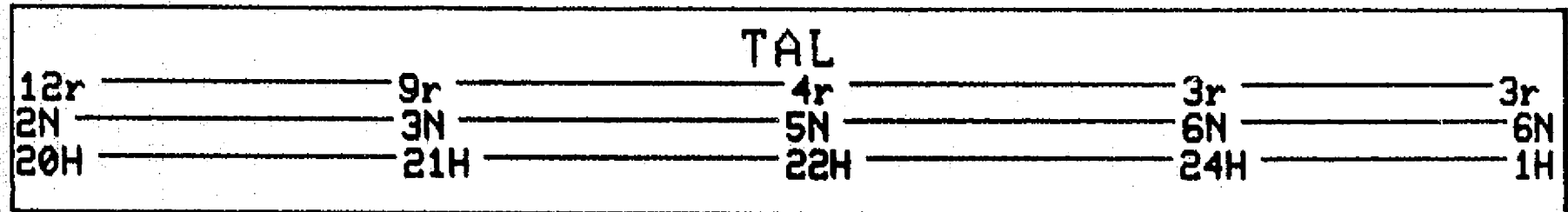


VELA
-5B

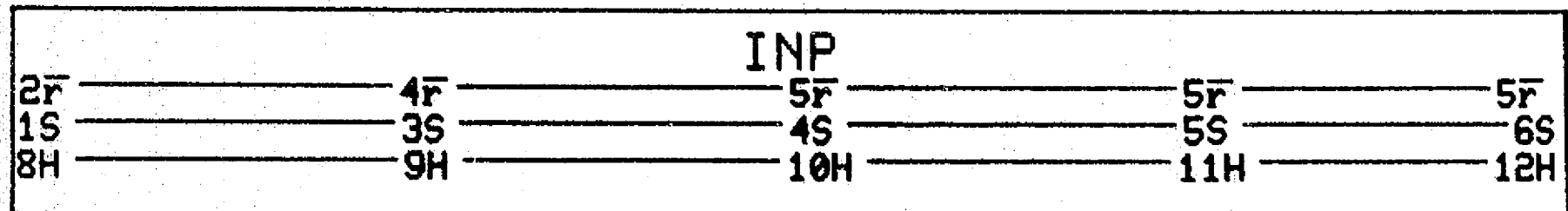


DAY 39 1977

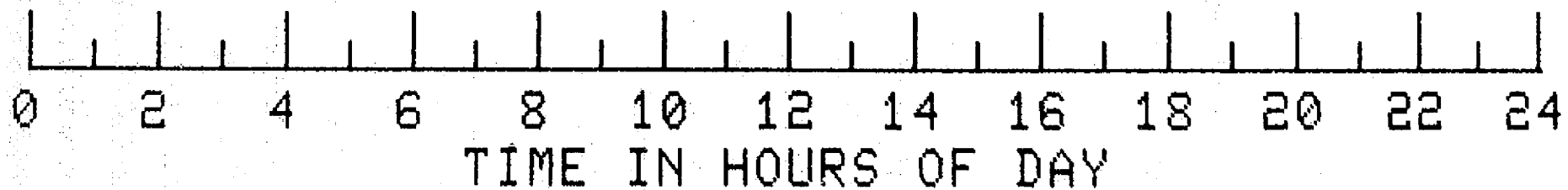
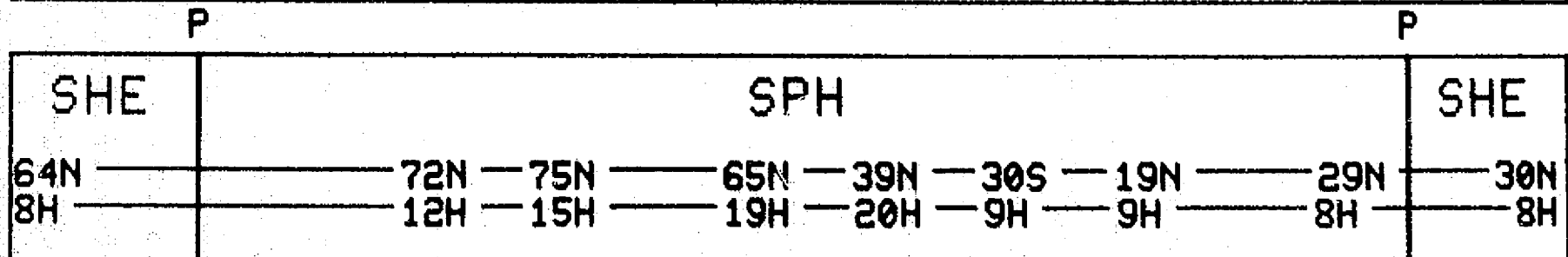
SOL
RAD
-11A



SOL
RAD
-11B

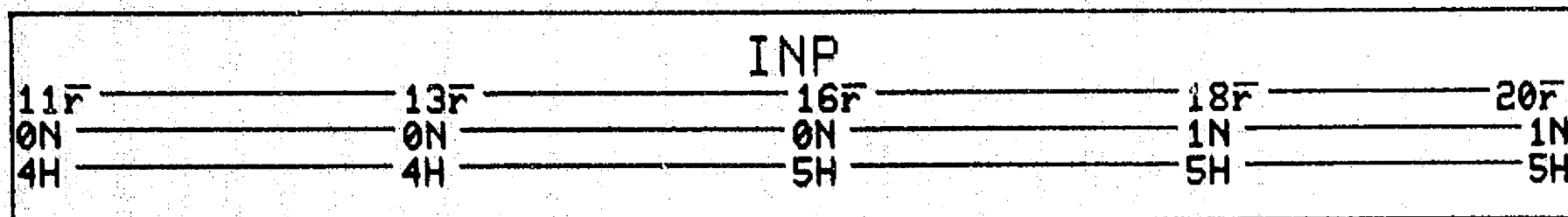


HAWK
EYE-1

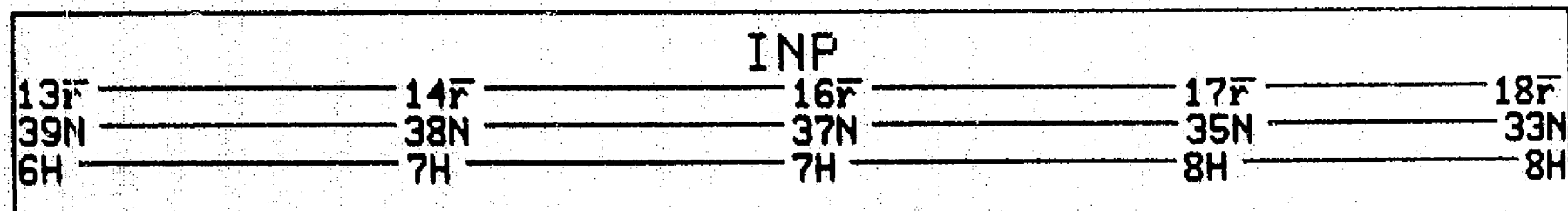


DAY 40 1977

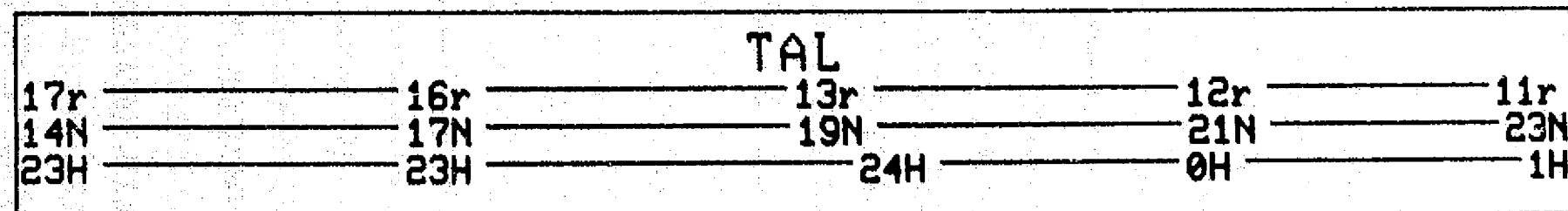
MOON



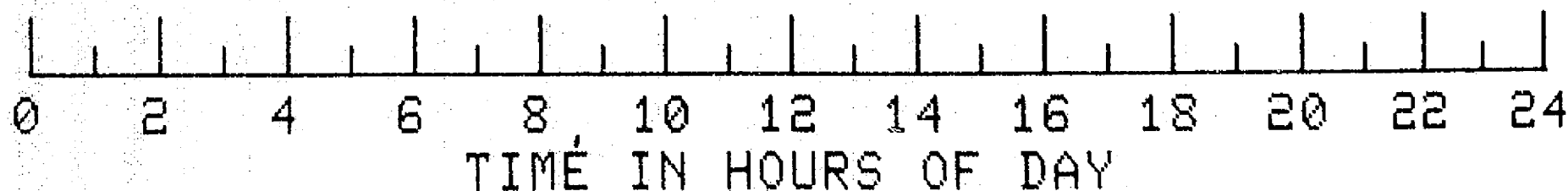
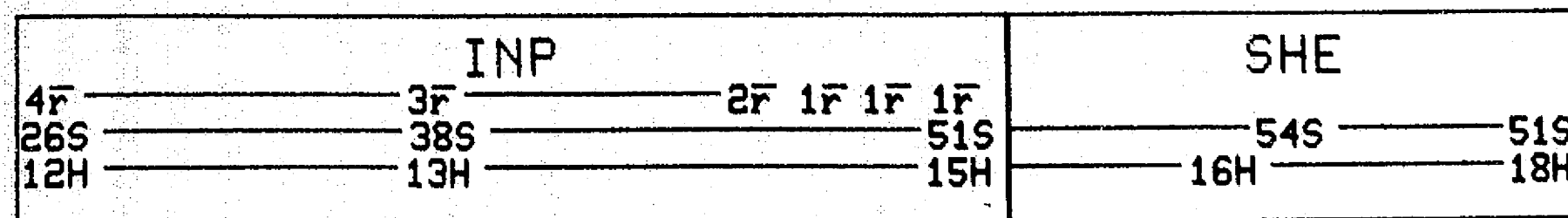
IMP-J



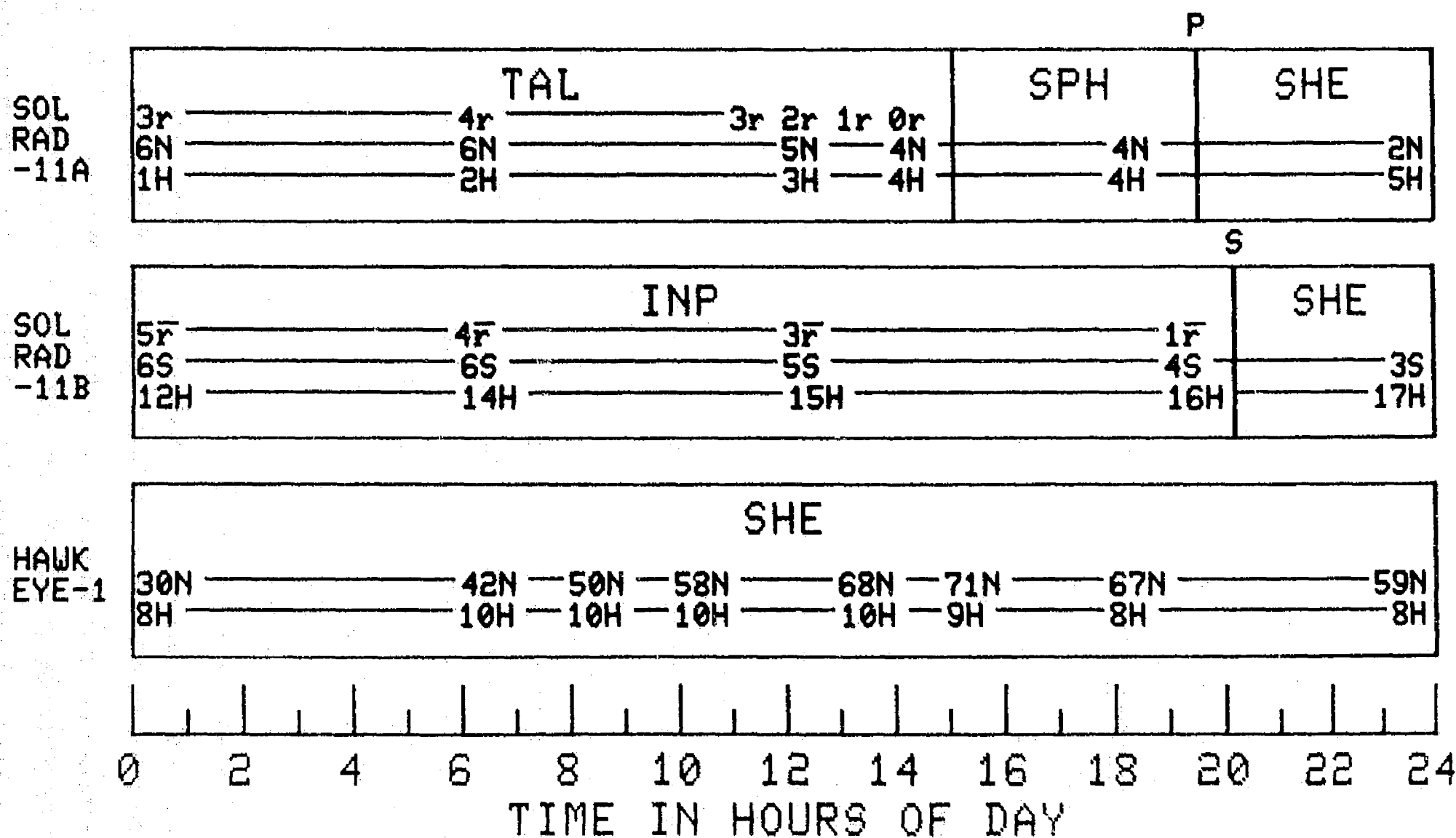
IMP-H



VELA
-5B

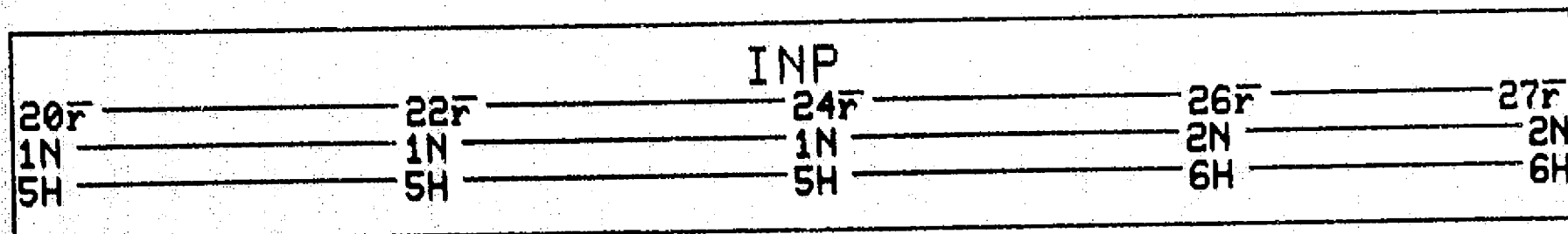


DAY 40 1977

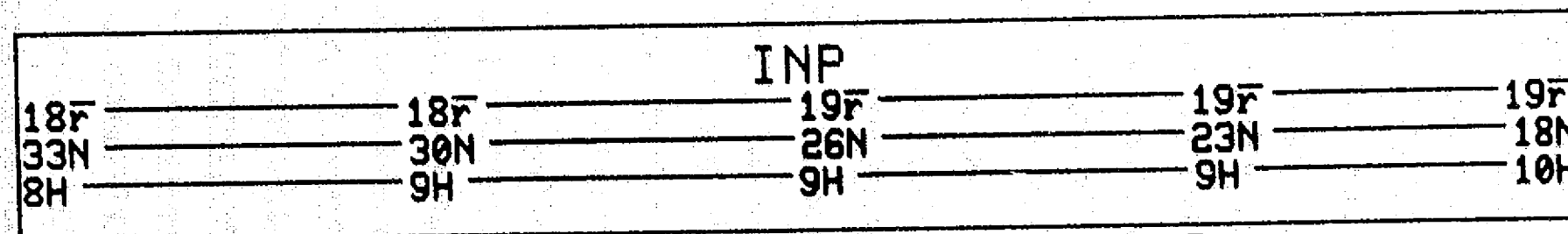


DAY 41 1977

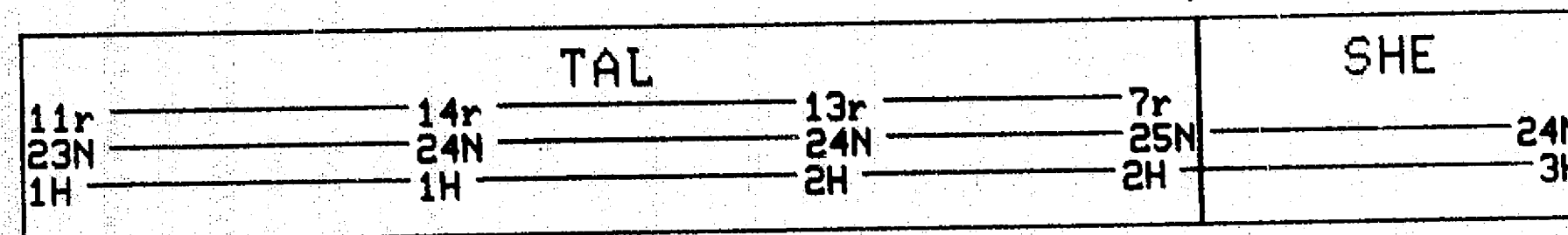
MOON



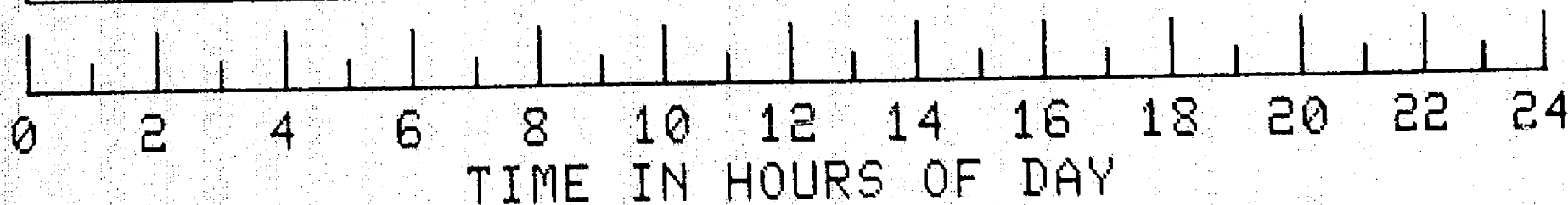
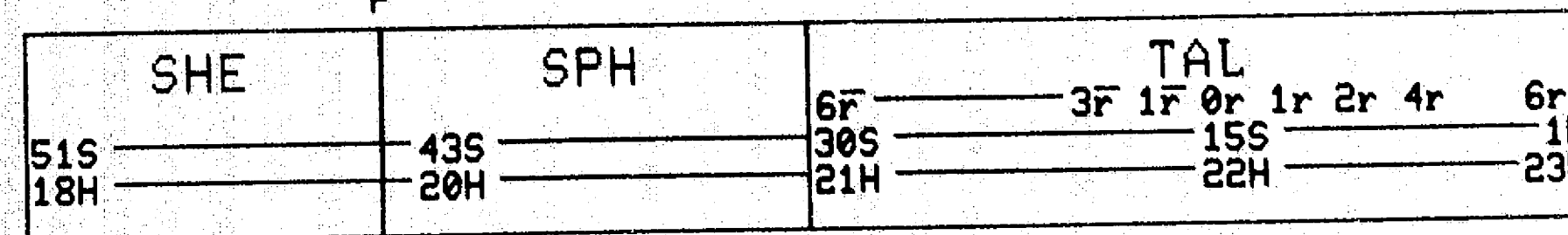
IMP-J



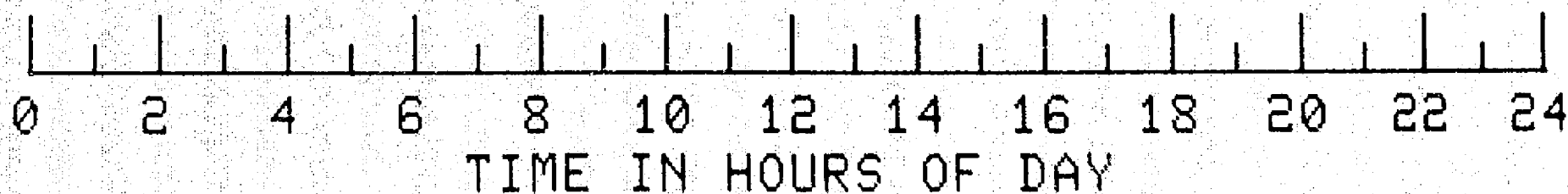
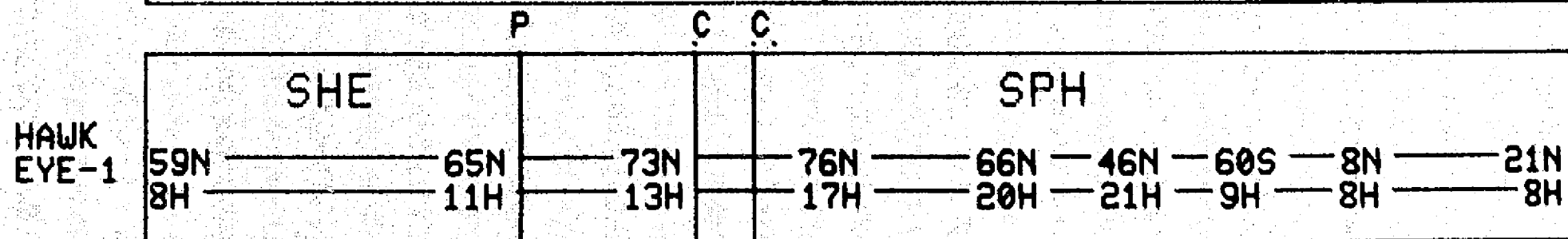
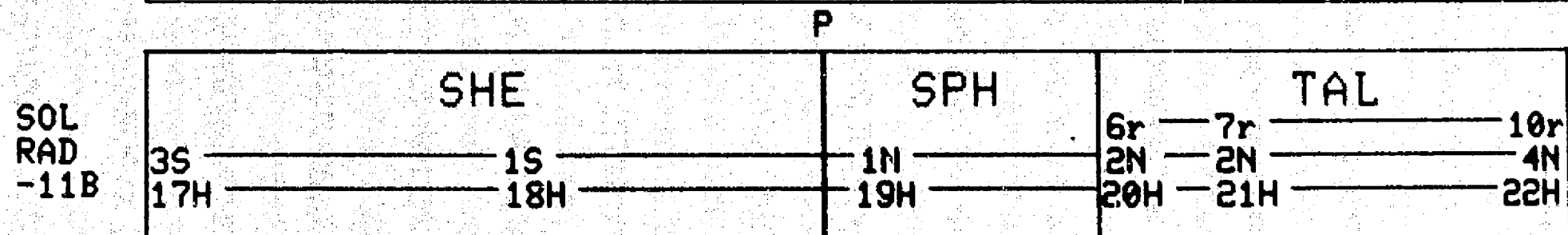
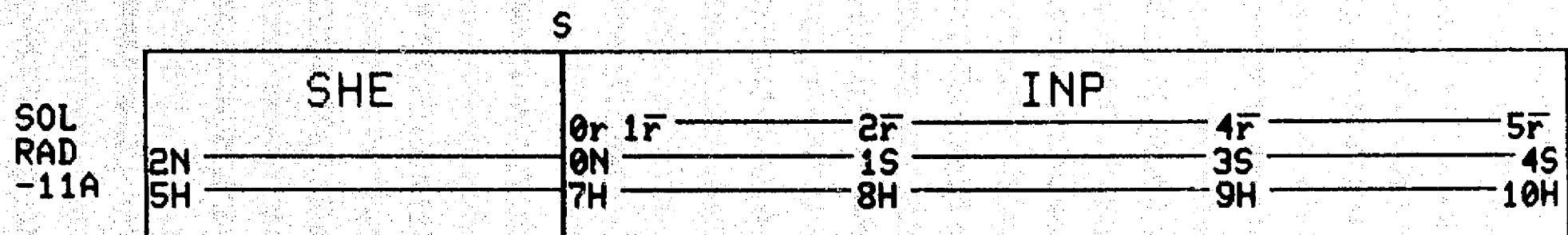
IMP-H



VELA
-5B

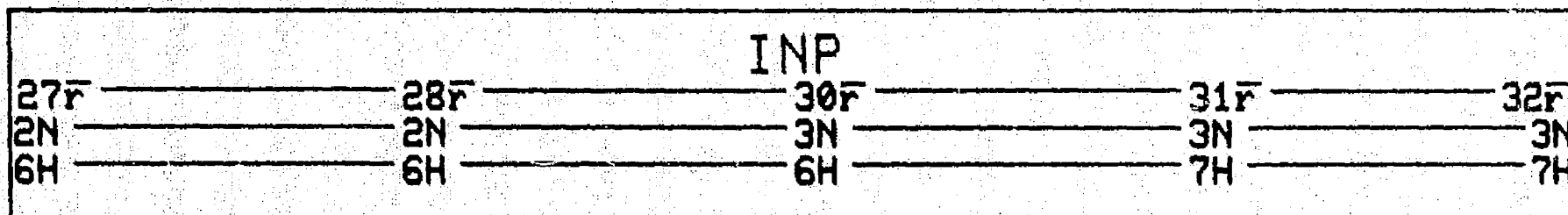


DAY 41 1977

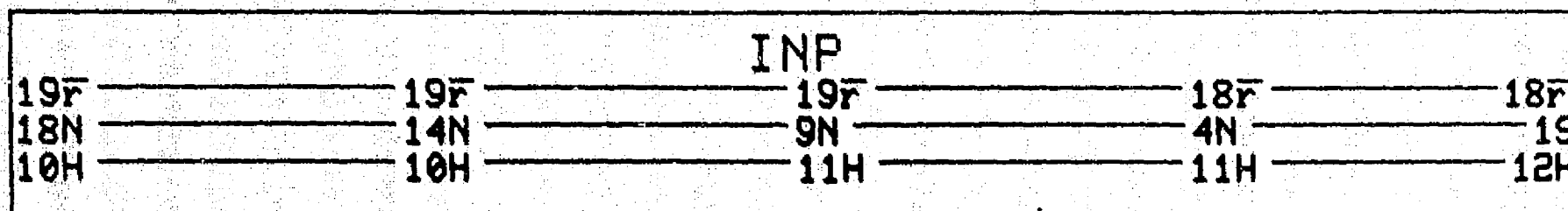


DAY 42 1977

MOON

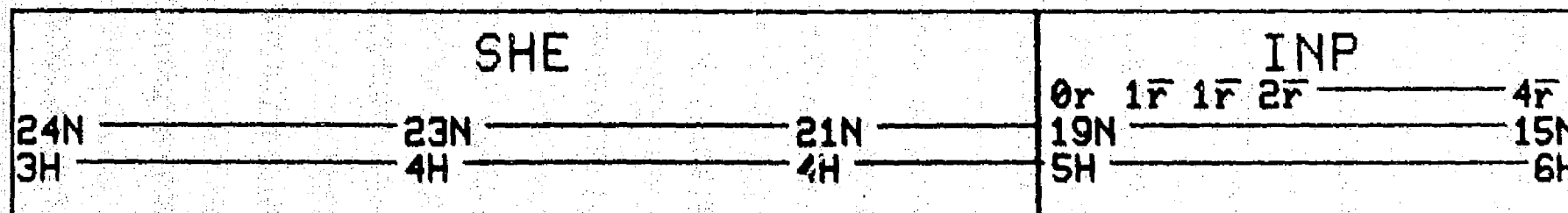


IMP-J

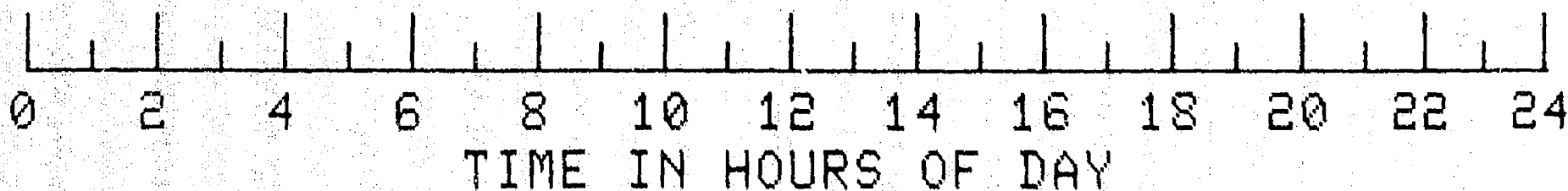
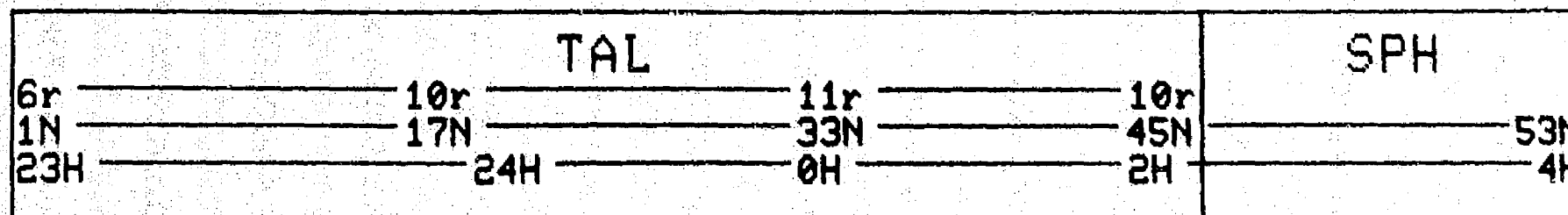


S

IMP-H

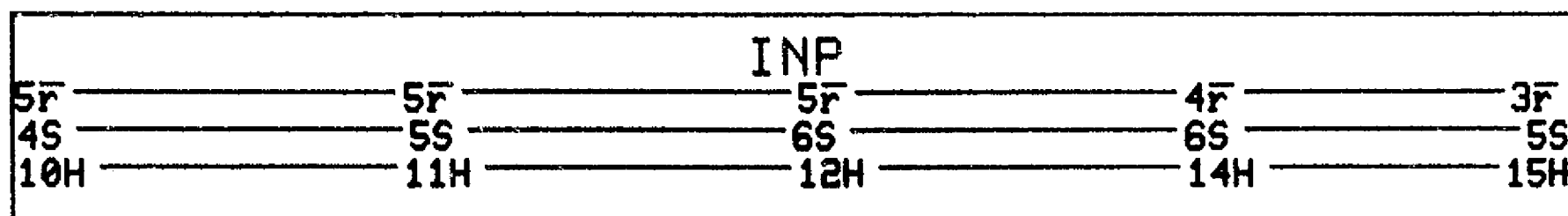


VELA
-5B

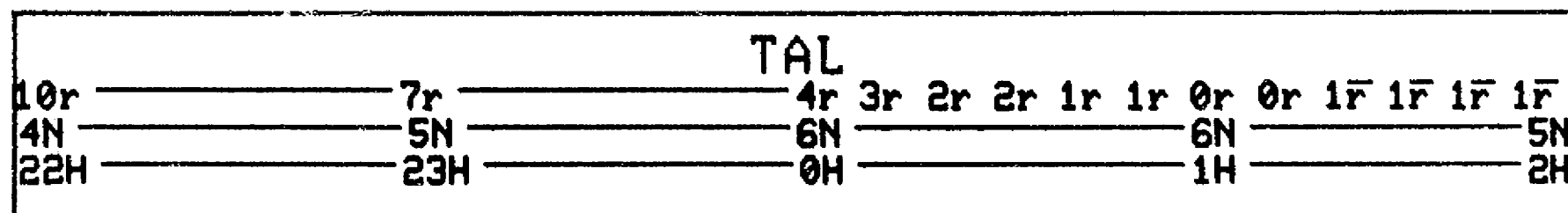


DAY 42 1977

SOL
RAD
-11A

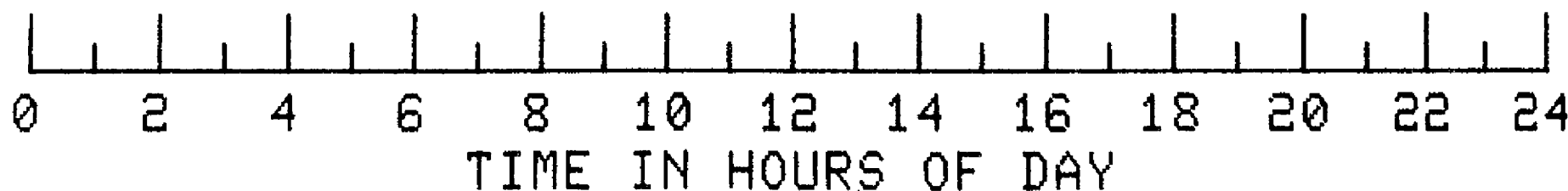
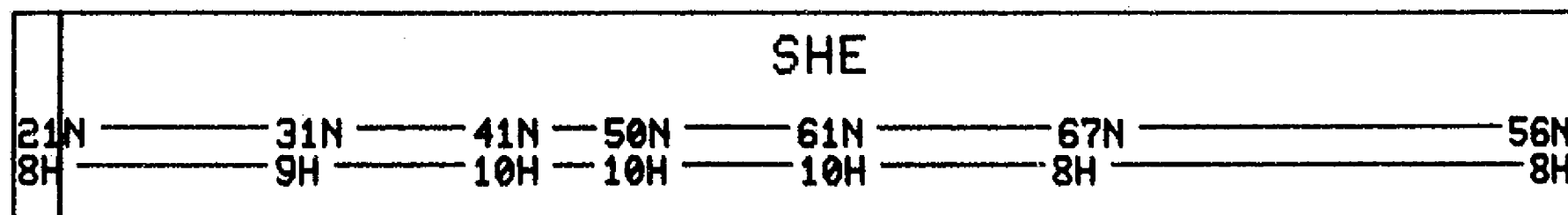


SOL
RAD
-11B



P

HAWK
EYE-1



DAY 43 1977

MOON

| | | | | |
|-----|-----|-----|-----|-----|
| INP | | | | |
| 32r | 34r | 35r | 36r | 37r |
| 3N | 3N | 4N | 4N | 4N |
| 7H | 7H | 7H | 7H | 8H |

IMP-J

| | | | | |
|-----|-----|-----|-----|-----|
| INP | | | | |
| 18r | 17r | 17r | 16r | 15r |
| 1S | 7S | 12S | 18S | 23S |
| 12H | 12H | 12H | 13H | 13H |

IMP-H

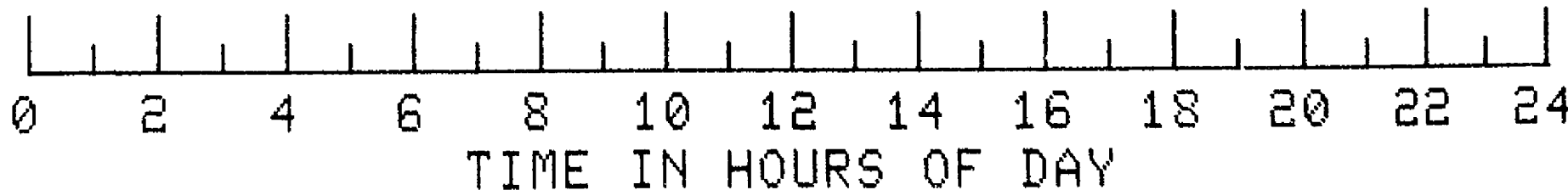
| | | | | |
|-----|-----|-----|-----|-----|
| INP | | | | |
| 5r | 7r | 10r | 12r | 14r |
| 15N | 12N | 9N | 5N | 1N |
| 6H | 6H | 7H | 7H | 8H |

P

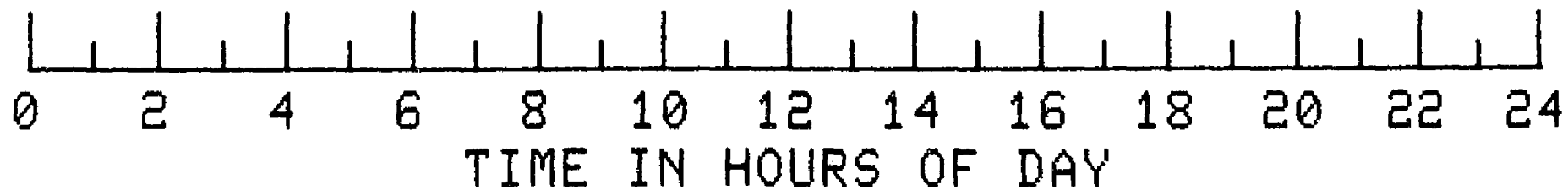
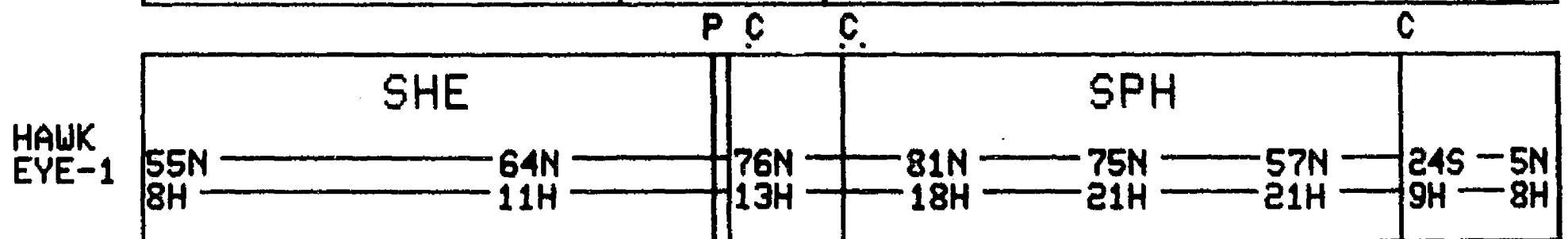
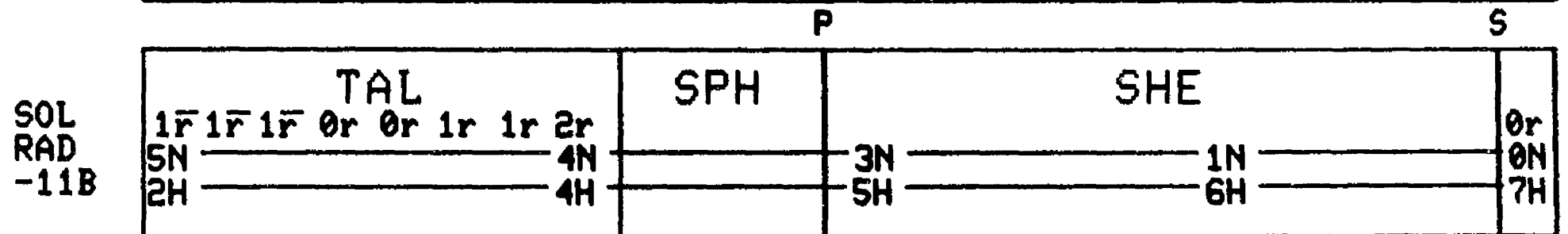
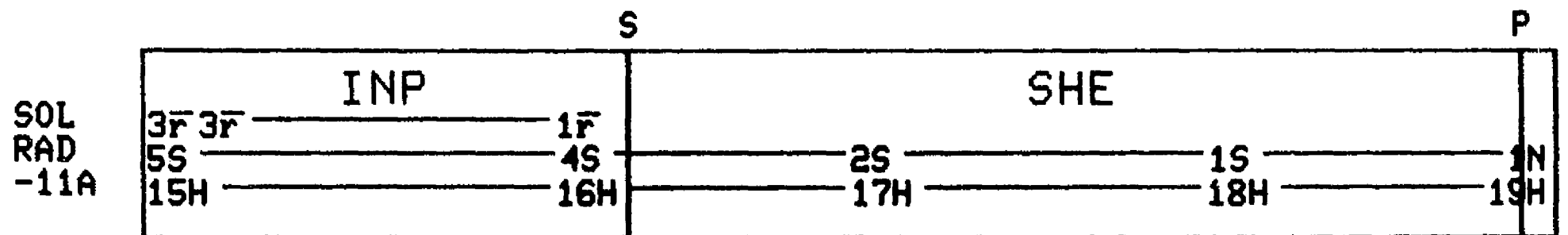
S

VELA
-5B

| | | | | | |
|-----|-----|-----|----------------|-----|-----|
| SHE | | | INP | | |
| 53N | 54N | 51N | 0r 1r 1r 1r 2r | 3r | 3r |
| 4H | | 6H | 38N | 26N | 12N |
| | | | 8H | 9H | 10H |

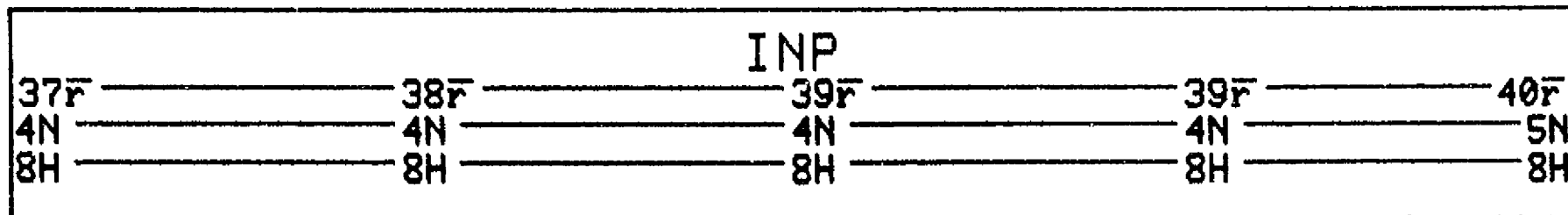


DAY 43 1977

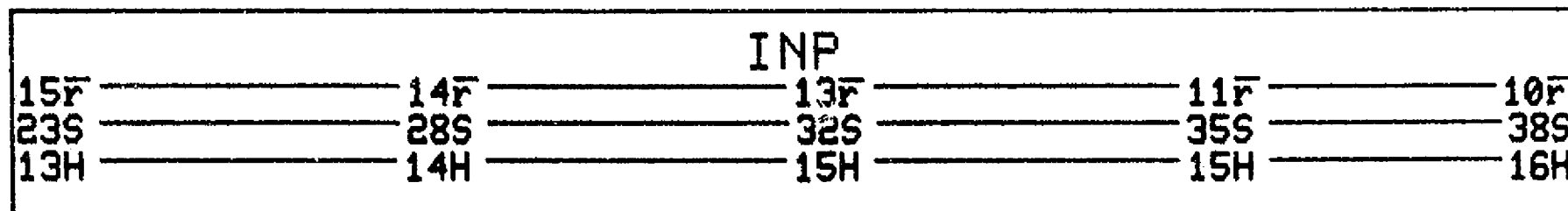


DAY 44 1977

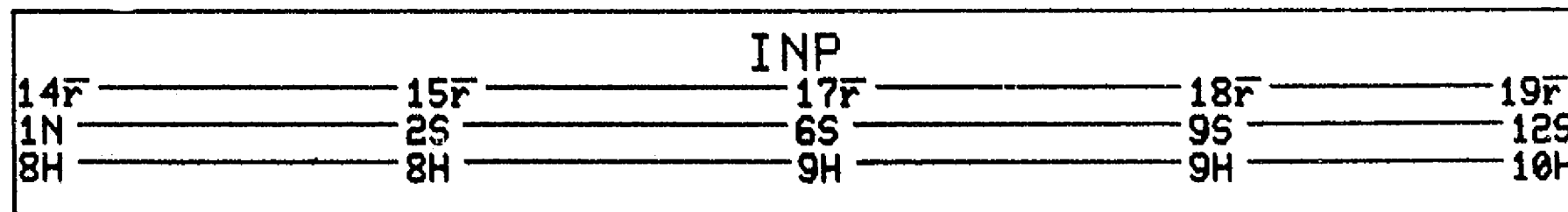
MOON



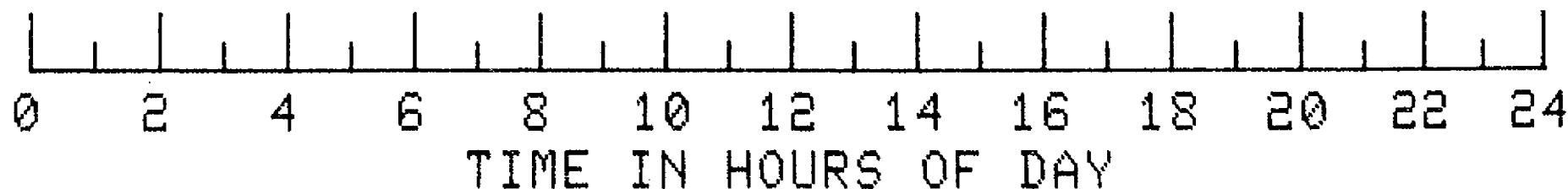
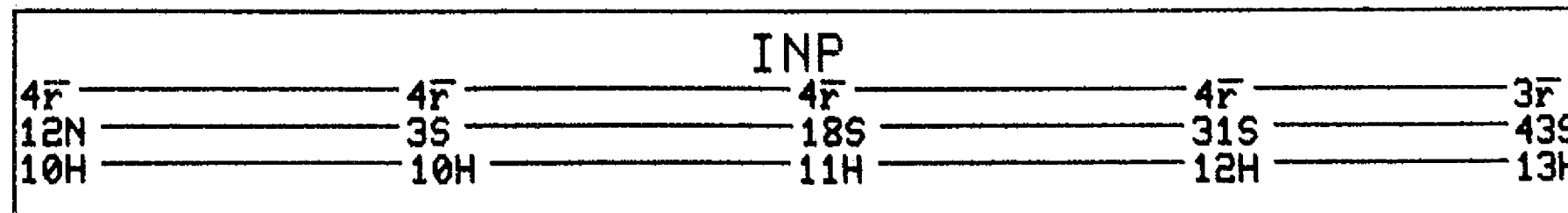
IMP-J



IMP-H

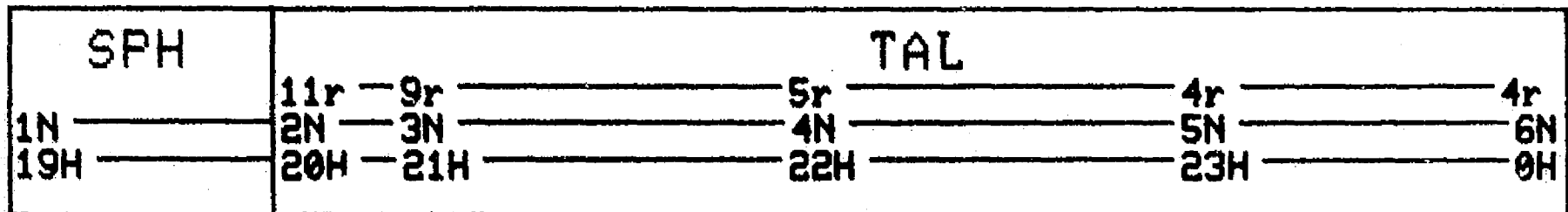


VELA
-5B

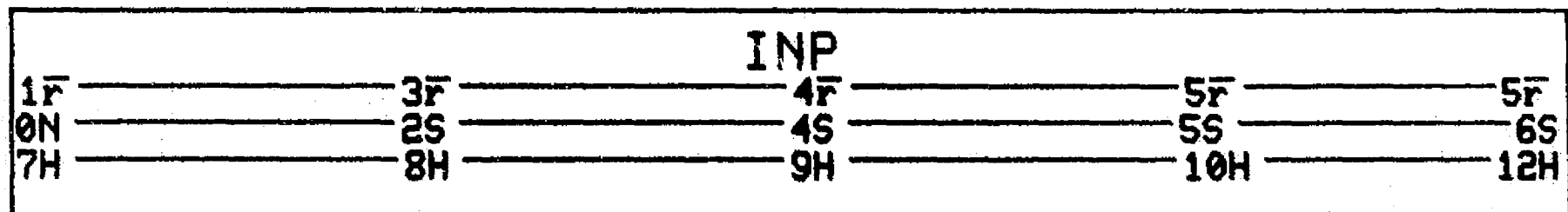


DAY 44 1977

SOL
RAD
-11A

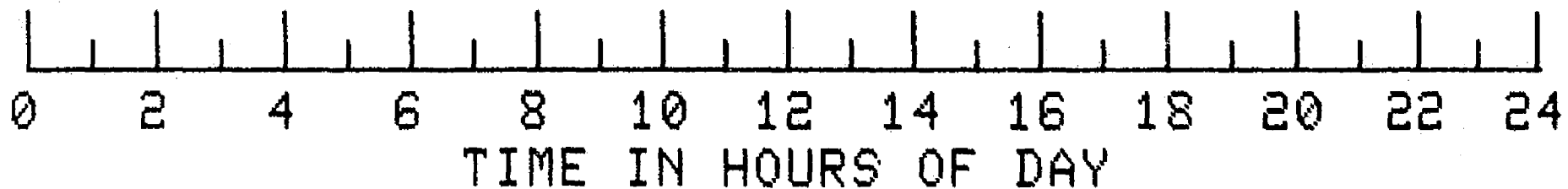
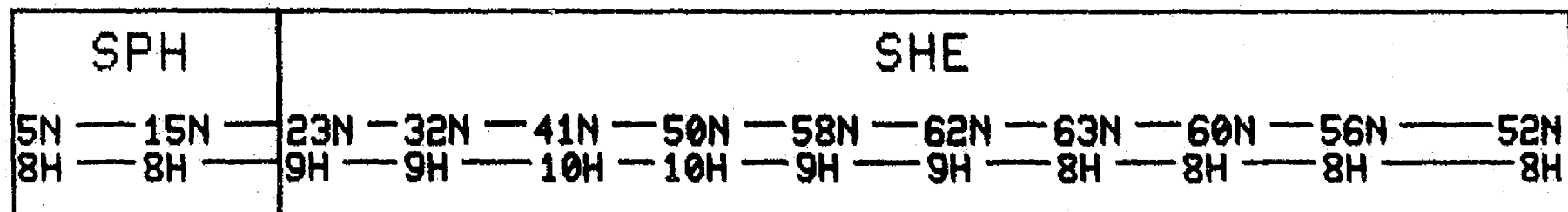


SOL
RAD
-11B



P

HAWK
EYE-1



DAY 45 1977

MOON

| | | | | |
|-----|-----|-----|-----|-----|
| INP | | | | |
| 40r | 41r | 41r | 42r | 42r |
| 5N | 5N | 5N | 5N | 5N |
| 8H | 9H | 9H | 9H | 9H |

S

IMP-J

| | | | | |
|-----|-----|-----|----------|-----|
| INP | | | | |
| 9r | 7r | 5r | 2r 1r 1r | SHE |
| 38S | 39S | 39S | 37S | 36S |
| 16H | 17H | 18H | 19H | 19H |

IMP-H

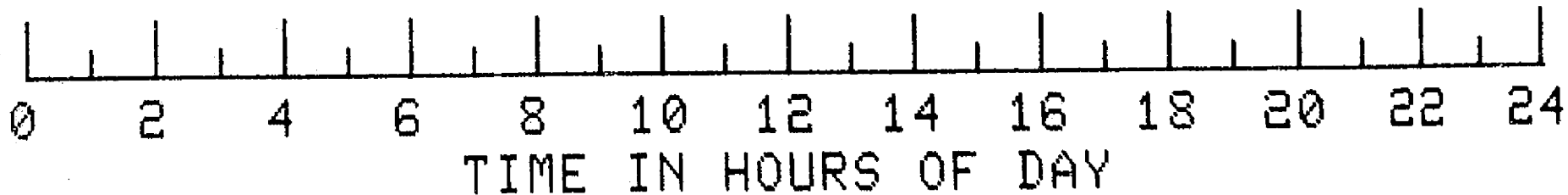
| | | | | |
|-----|-----|-----|-----|-----|
| INP | | | | |
| 19r | 20r | 21r | 21r | 22r |
| 12S | 15S | 17S | 19S | 21S |
| 10H | 10H | 11H | 11H | 12H |

S

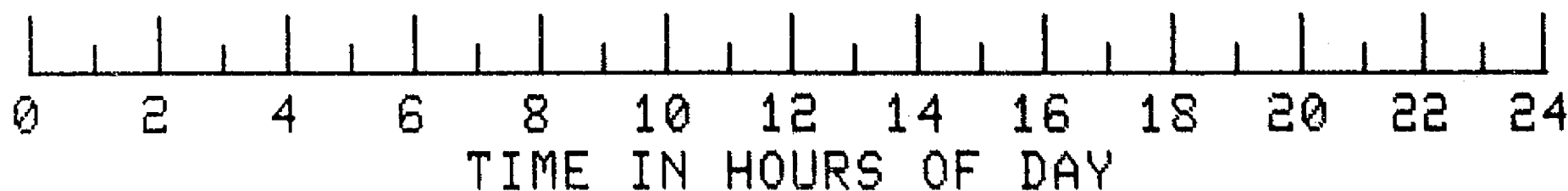
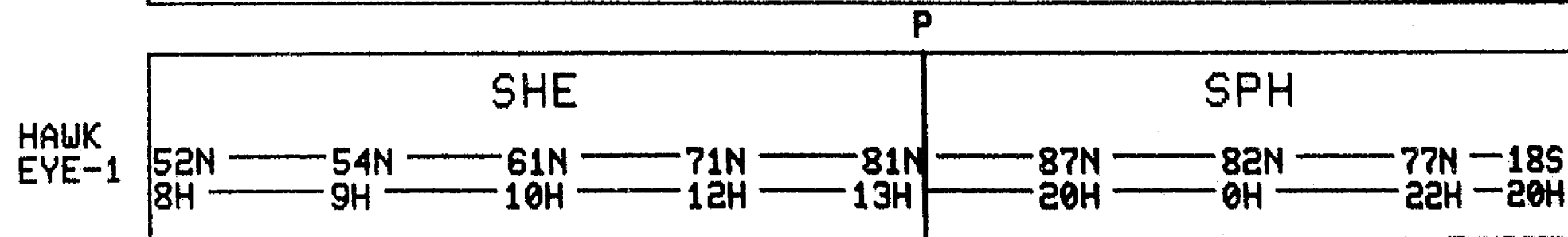
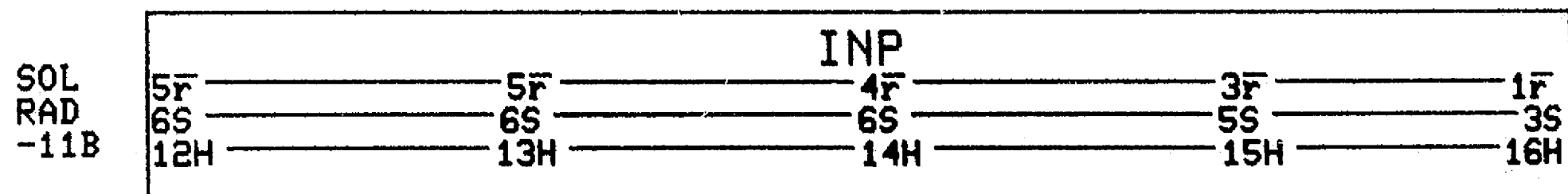
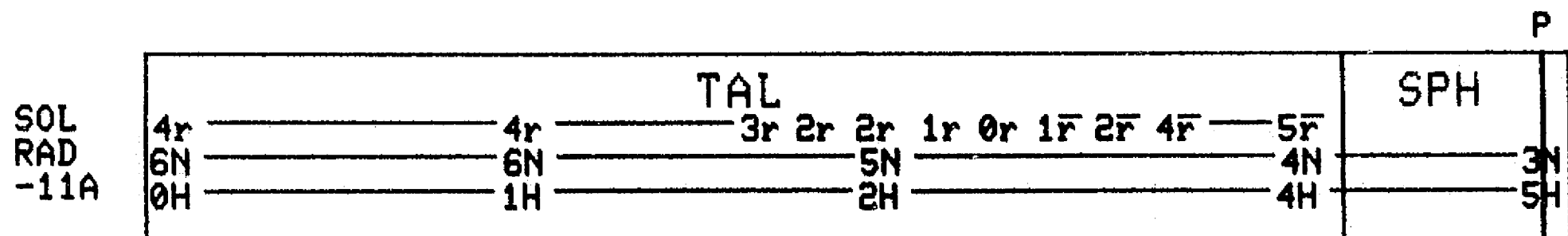
P

VELA
-5B

| | | | | |
|-----|-------------|-----|-----|-----|
| INP | | SHE | | SPH |
| 3r | 2r 1r 1r 0r | | | |
| 43S | 52S | 54S | 49S | 39S |
| 13H | 15H | 17H | 18H | 20H |



DAY 45 1977



DAY 46 1977

MOON

| INP | | | | |
|-----|-----|-----|-----|-----|
| 42r | 43r | 43r | 44r | 44r |
| 5N | 5N | 5N | 5N | 5N |
| 9H | 10H | 10H | 10H | 10H |

IMP-J

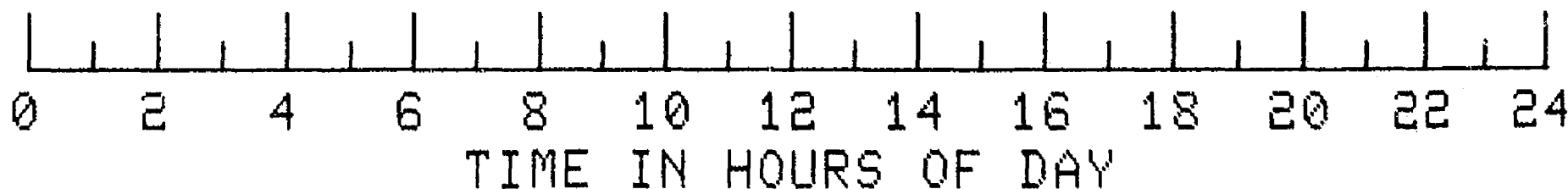
| SHE | | | | |
|-----|-----|-----|-----|-----|
| 36S | 33S | 29S | 25S | 21S |
| 19H | 20H | 20H | 21H | 21H |

IMP-H

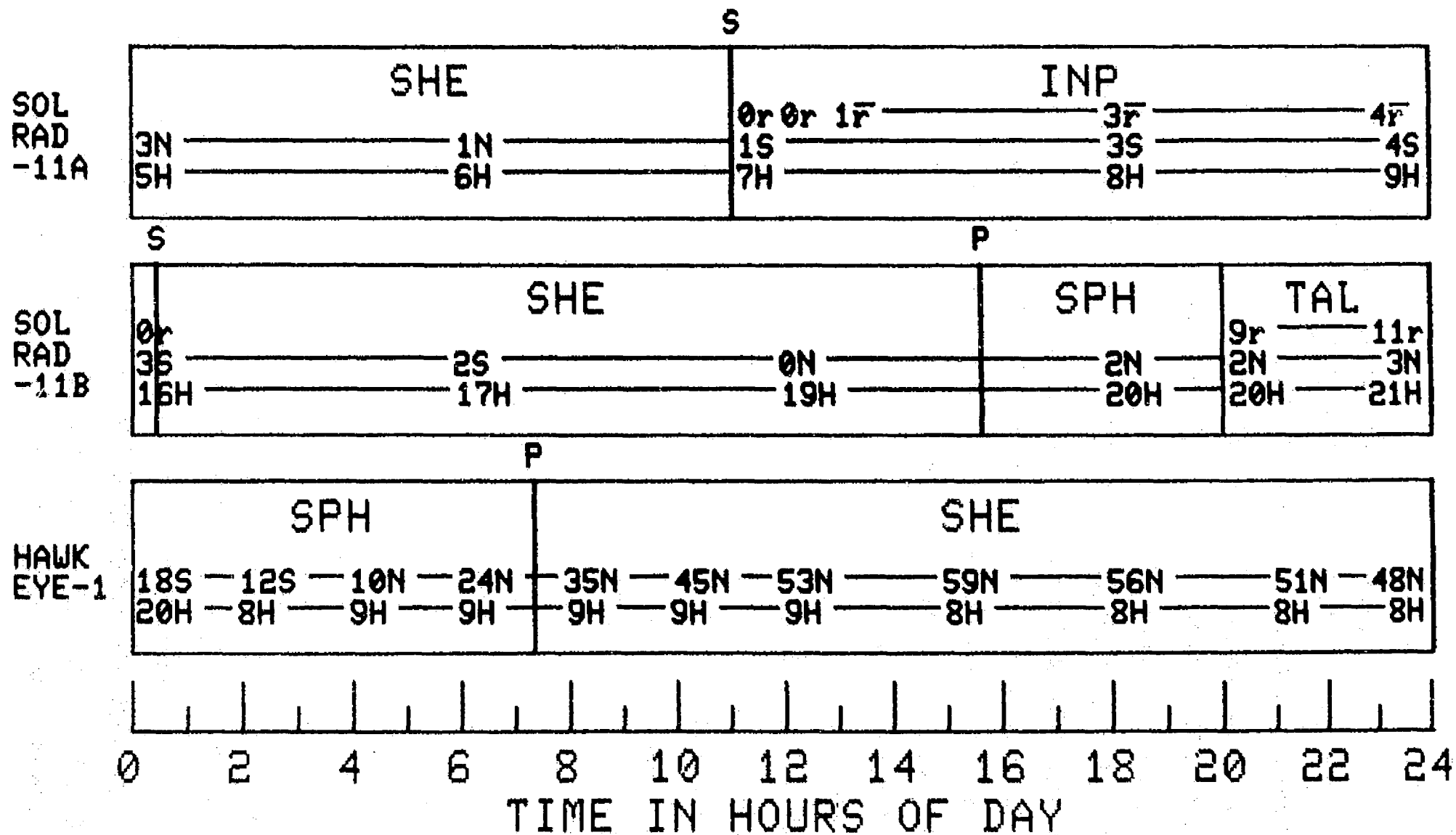
| INP | | | | |
|-----|-----|-----|-----|-----|
| 22r | 22r | 22r | 22r | 22r |
| 21S | 22S | 23S | 24S | 24S |
| 12H | 12H | 12H | 13H | 13H |

VELA
-5B

| SPH | | TAL | | | | | | | | | | | | |
|-----|--|-----|----|----|----|----|----|-----|----|----|----|----|-----|-----|
| | | 0r | 0r | 0r | 0r | 0r | 0r | 0r | 1r | 1r | 2r | 3r | 5r | 9r |
| 39S | | 27S | | | | | | 9S | | | | | 7N | 24N |
| 20H | | 21H | | | | | | 22H | | | | | 23H | 23H |

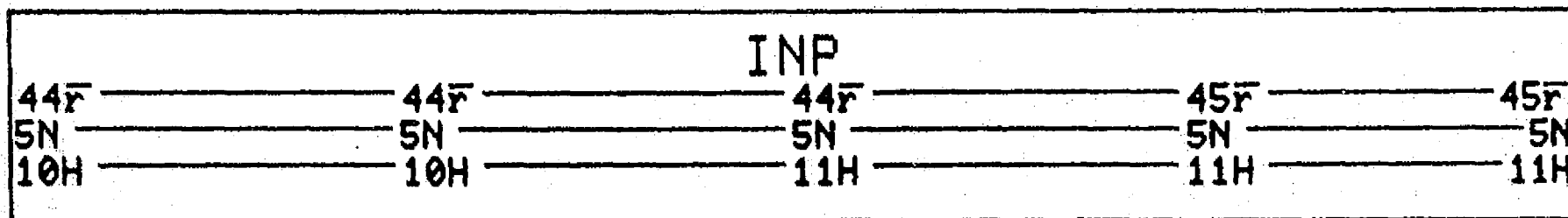


DAY 46 1977



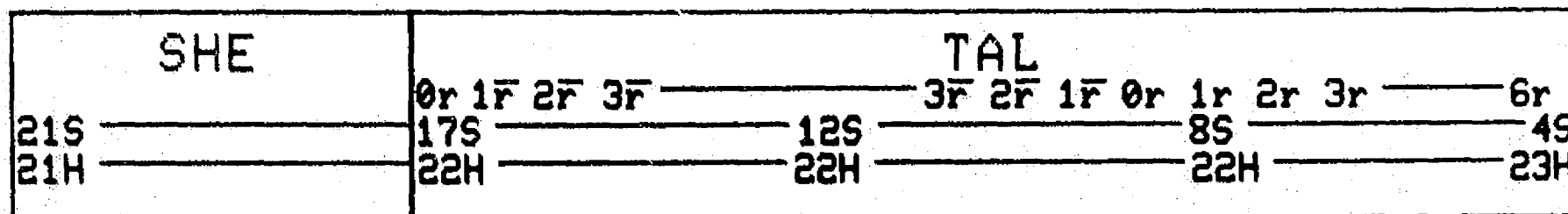
DAY 47 1977

MOON

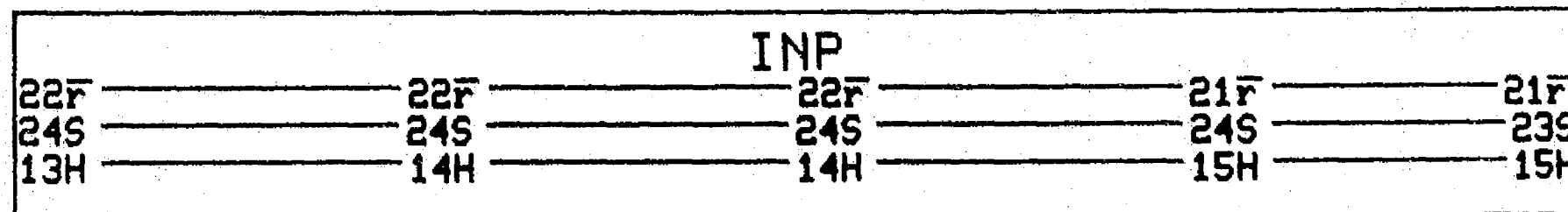


P

IMP-J

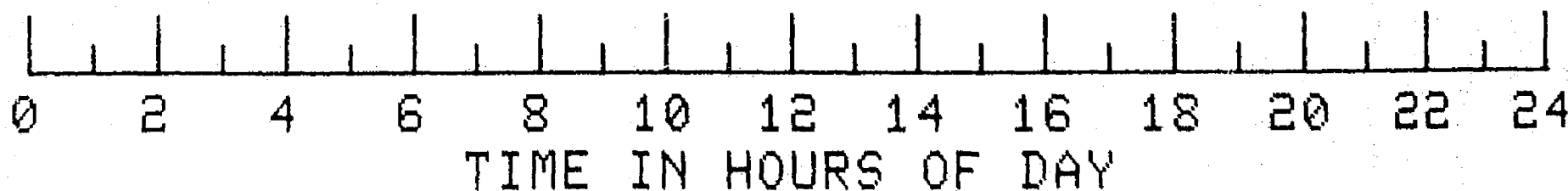
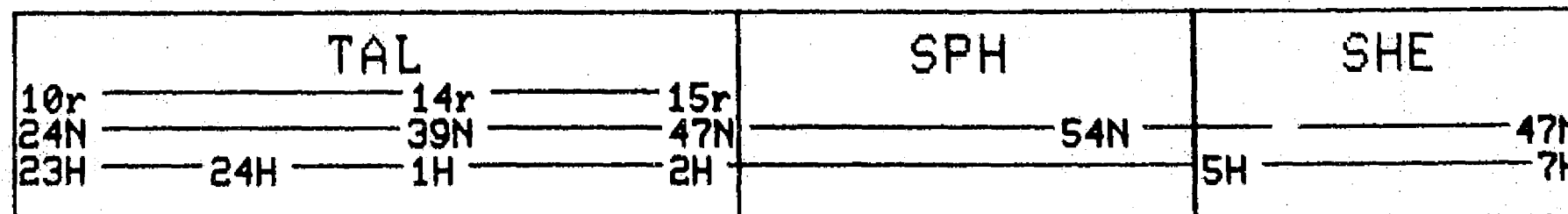


IMP-H



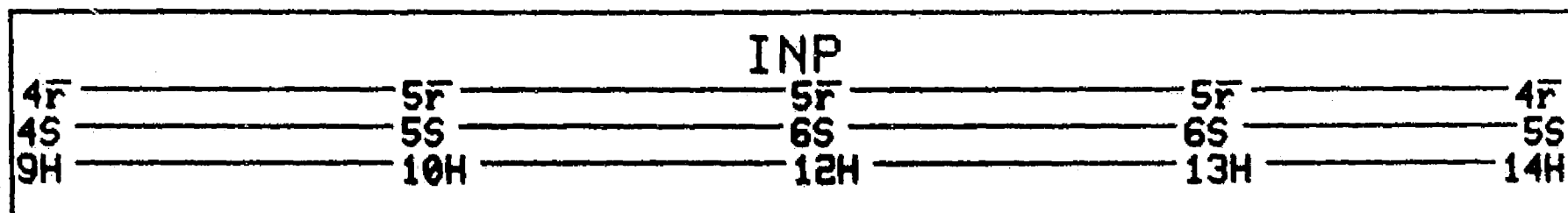
P

UE A
-5B

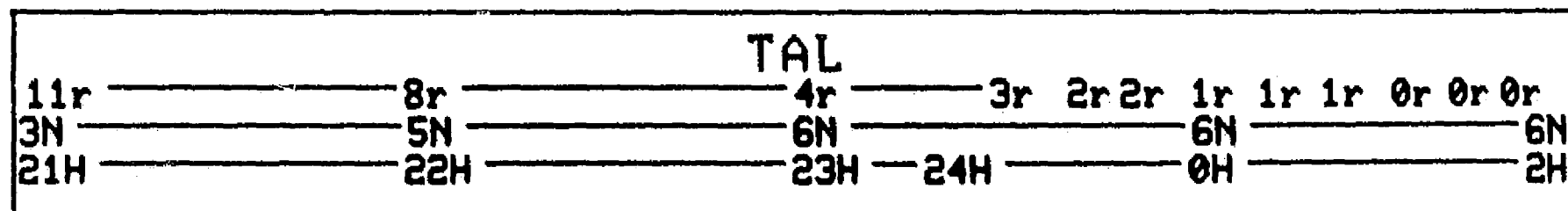


DAY 47 1977

SOL
RAD
-11A

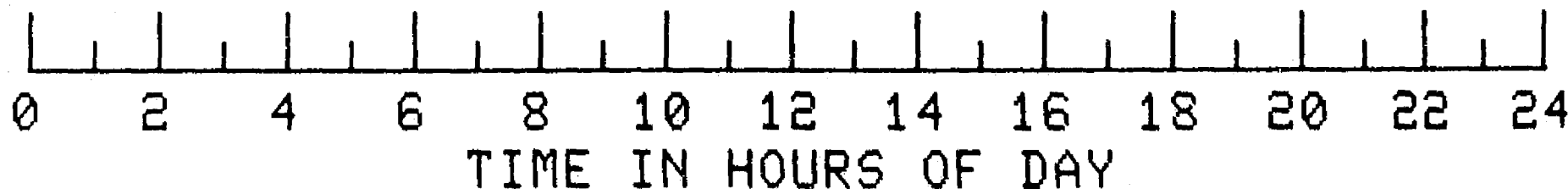
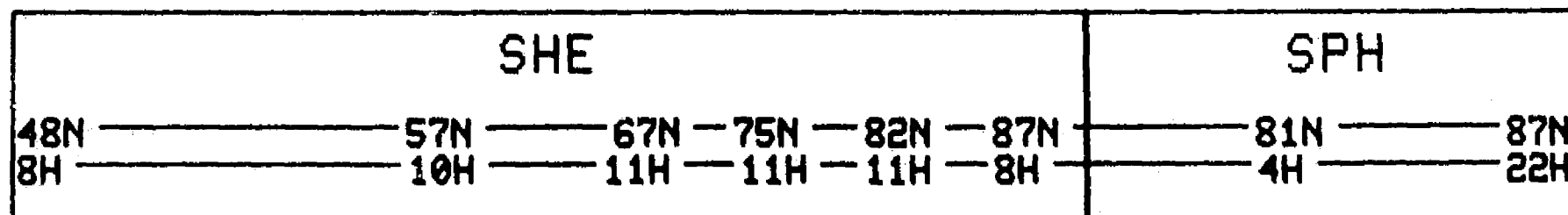


SOL
RAD
-11B



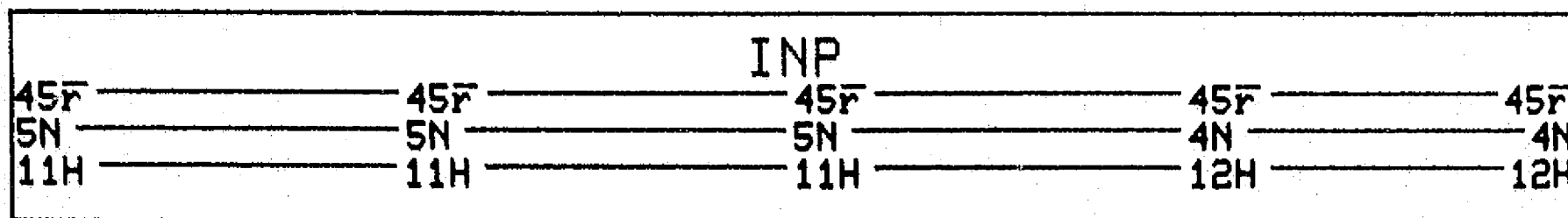
P

HAWK
EYE-1

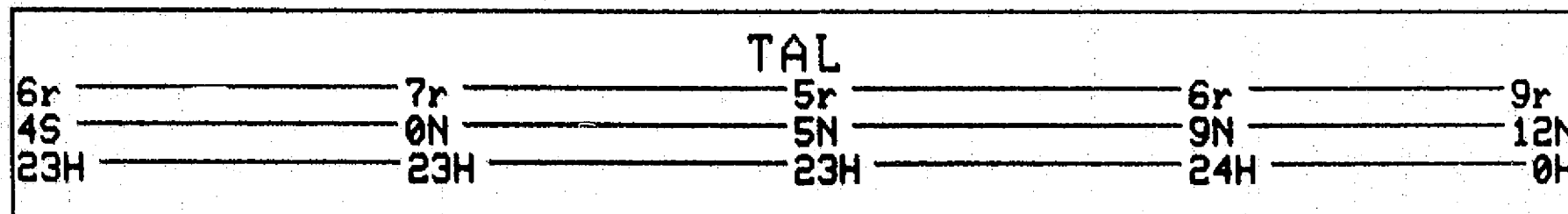


DAY 48 1977

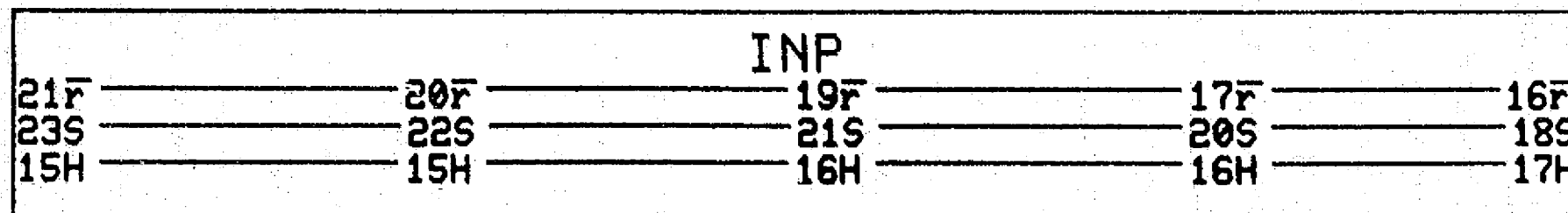
MOON



IMP-J

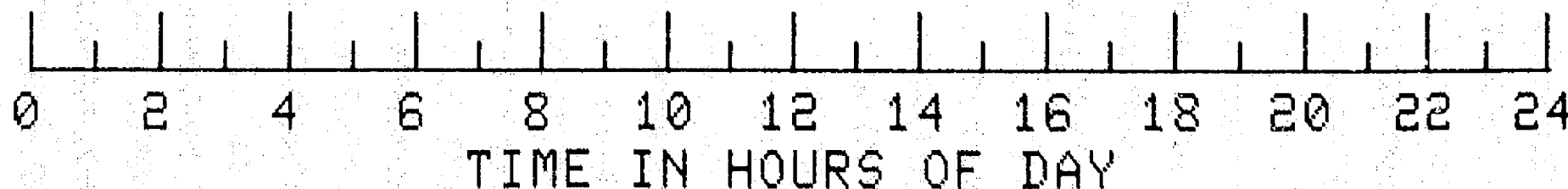
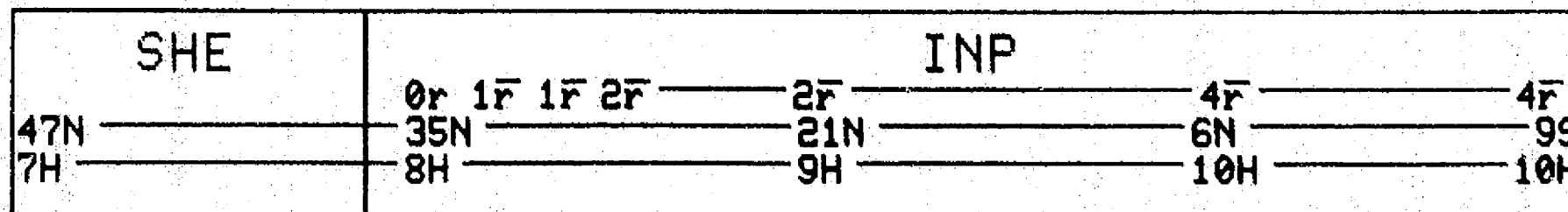


IMP-H

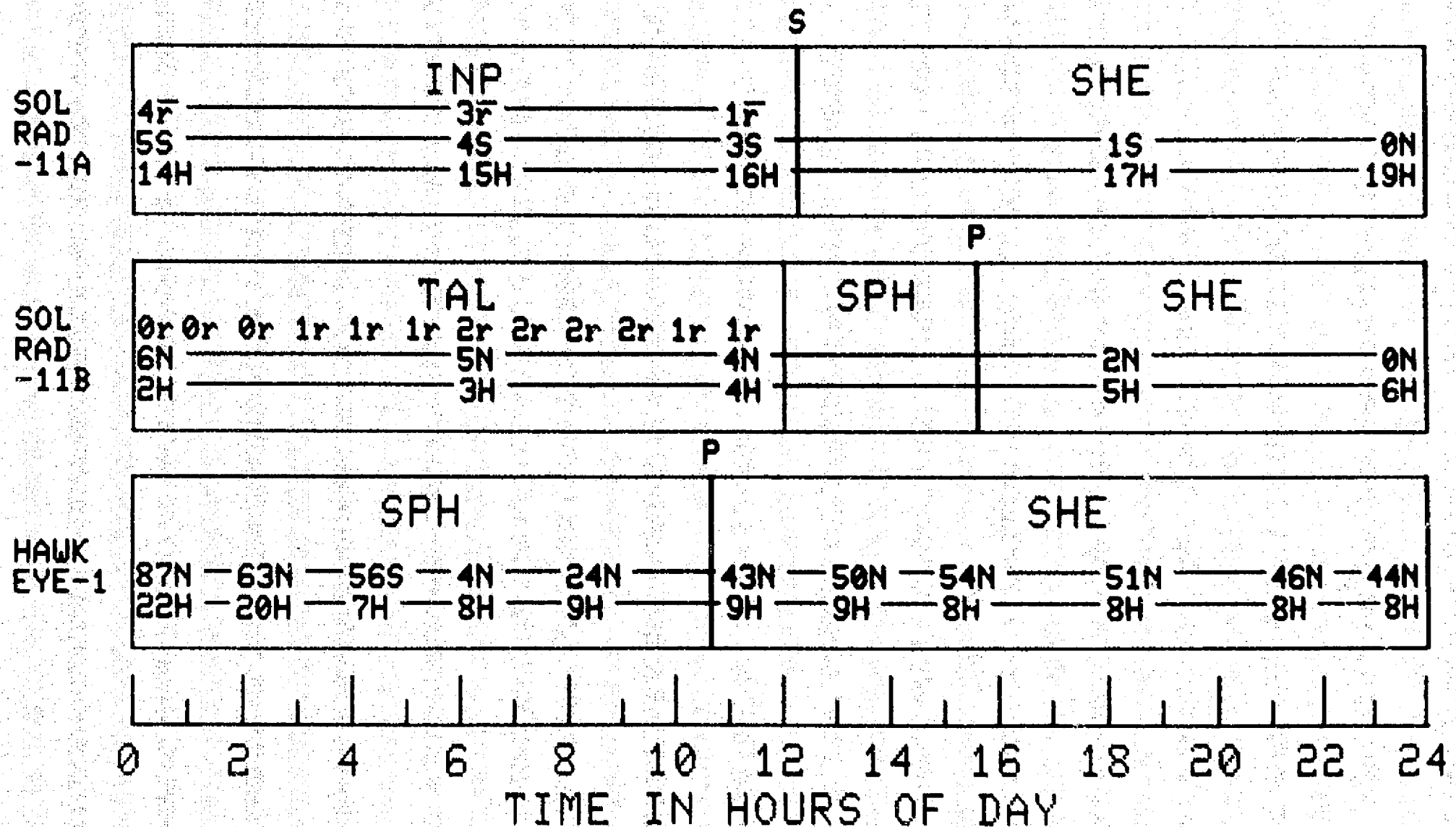


S

VELA
-5B

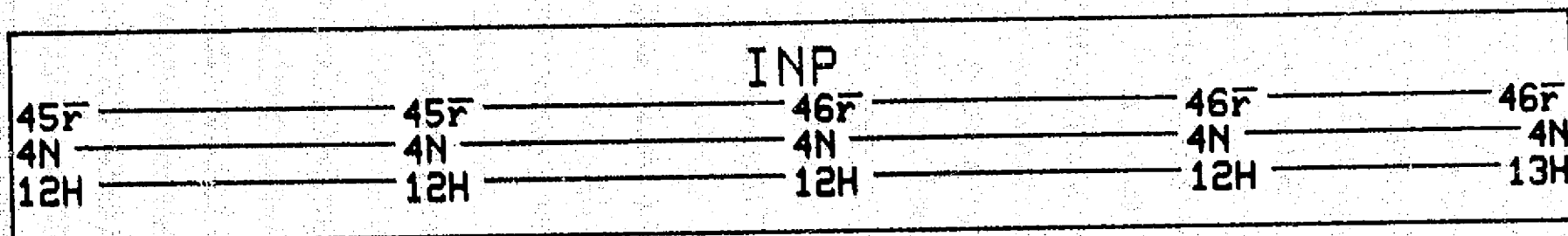


DAY 48 1977

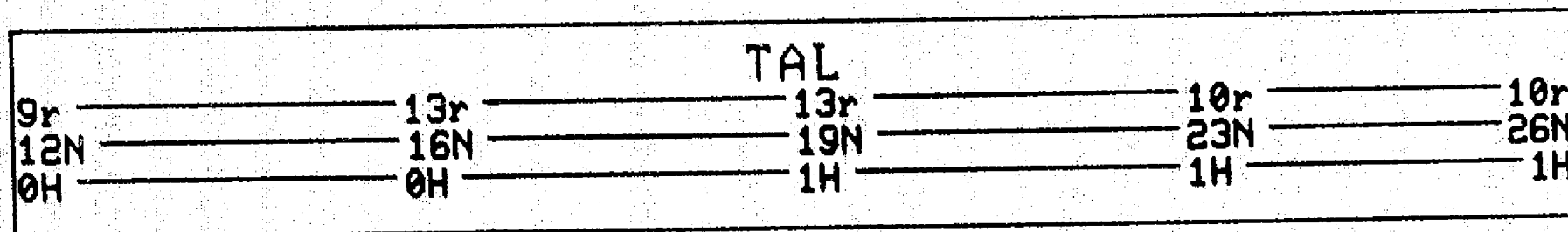


DAY 49 1977

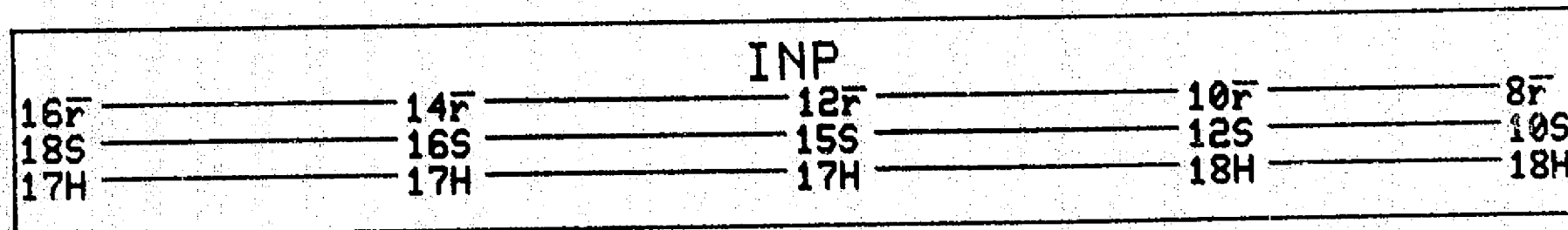
MOON



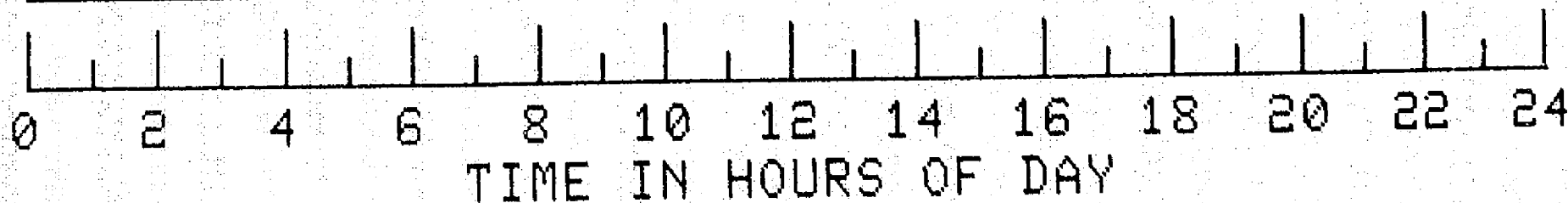
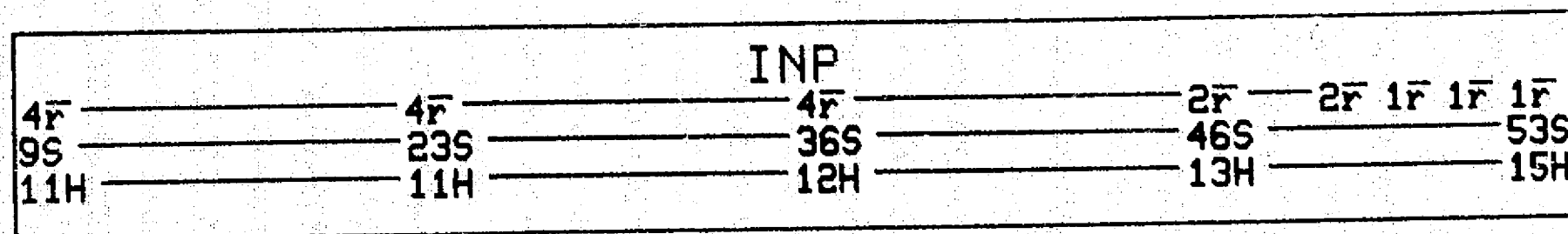
IMP-J



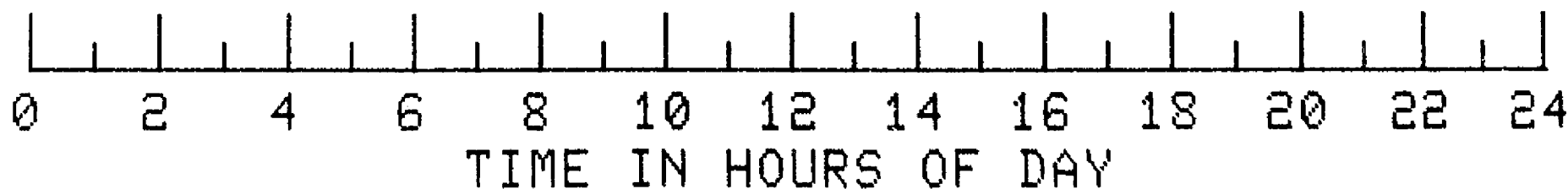
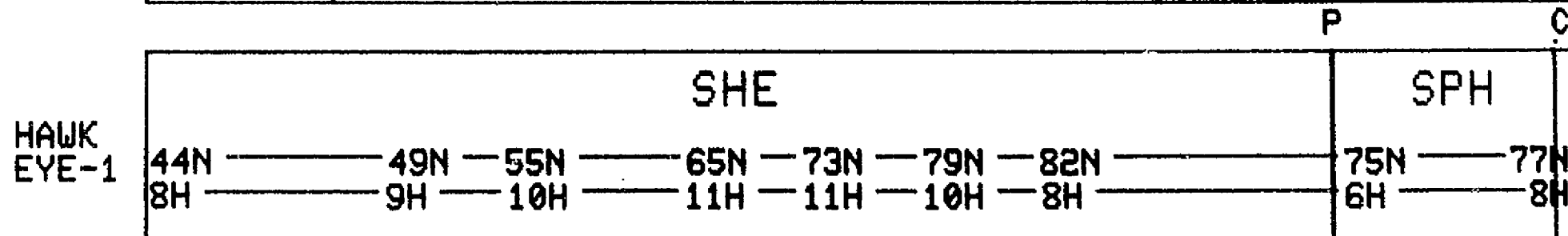
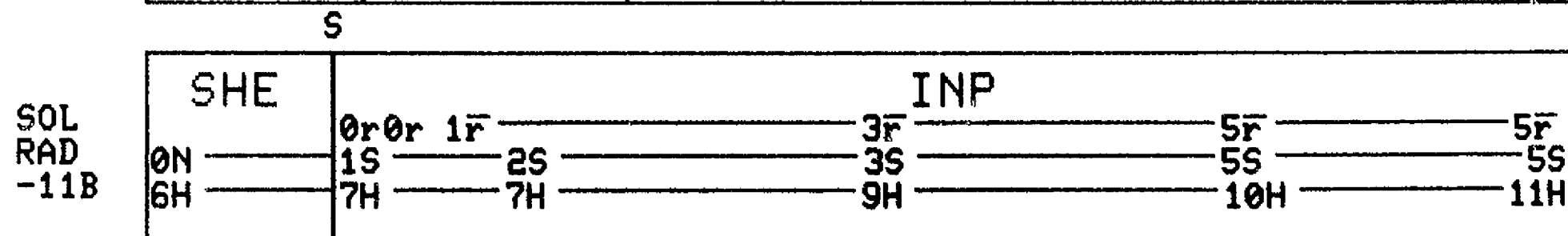
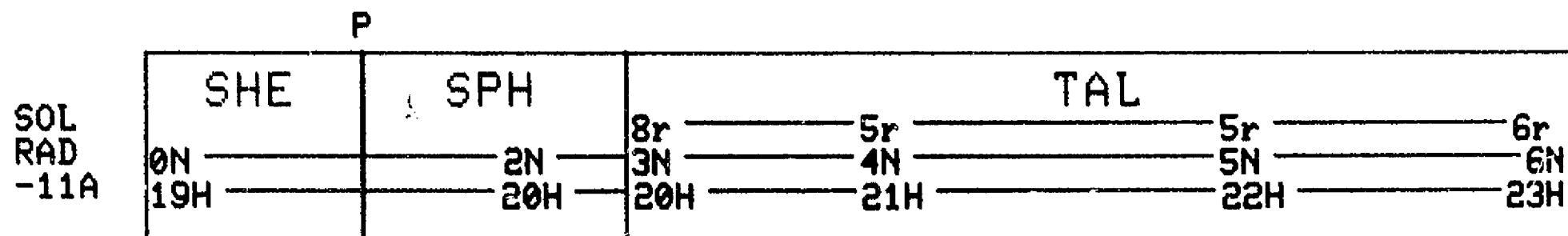
IMP-H



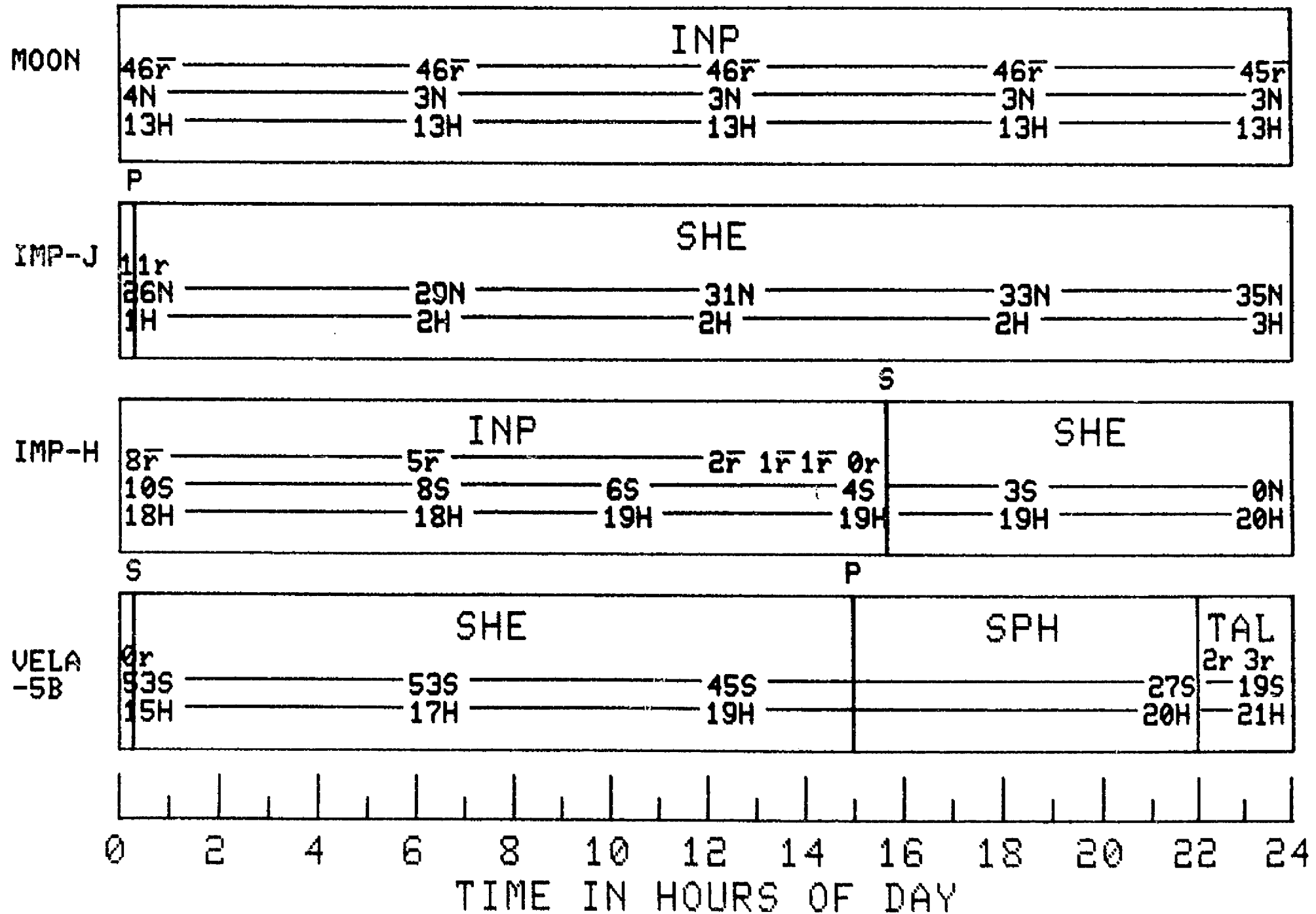
VELA
-5B



DAY 49 1977

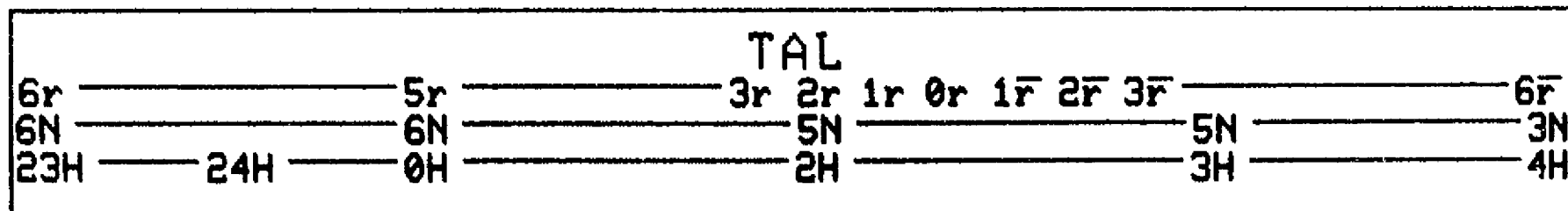


DAY 50 1977

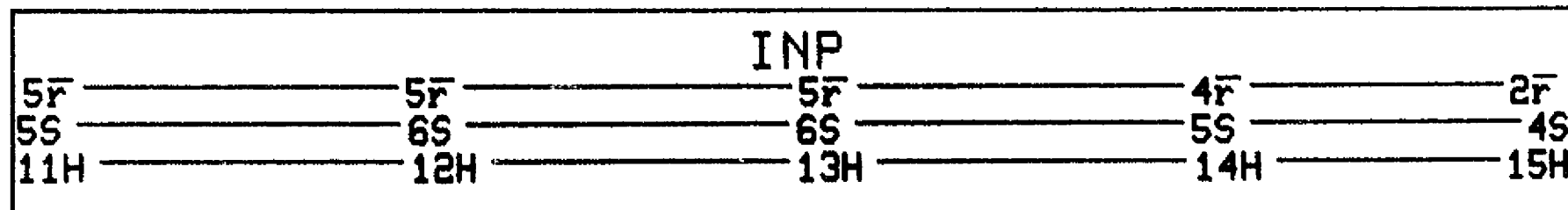


DAY 50 1977

SOL
RAD
-11A



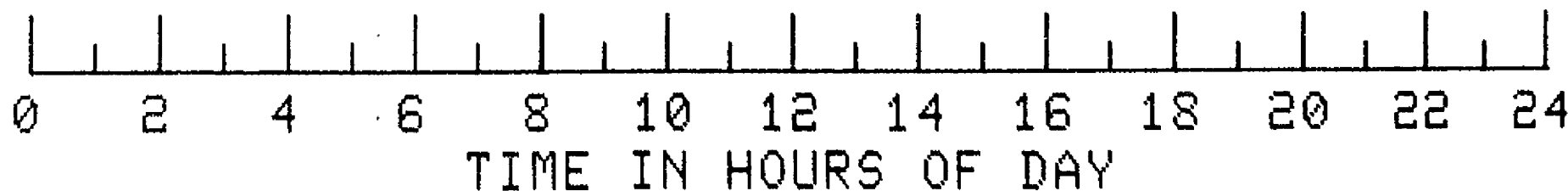
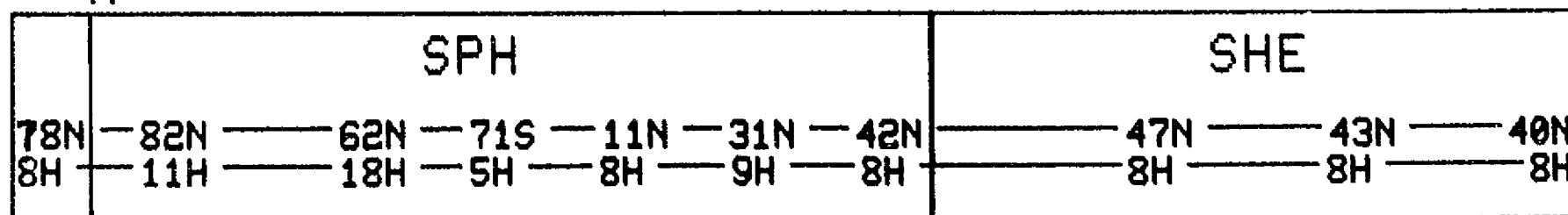
SOL
RAD
-11B



C.

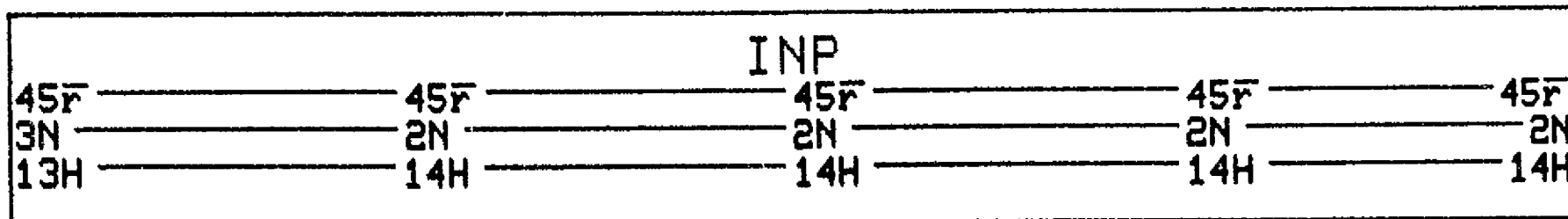
P

HAWK
EYE-1



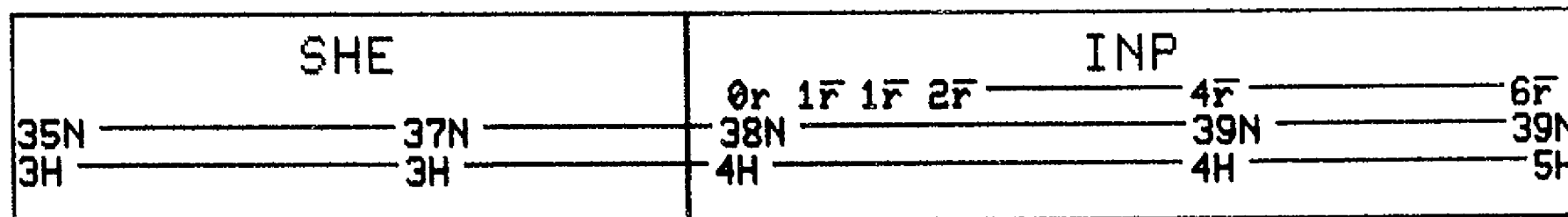
DAY 51 1977

MOON

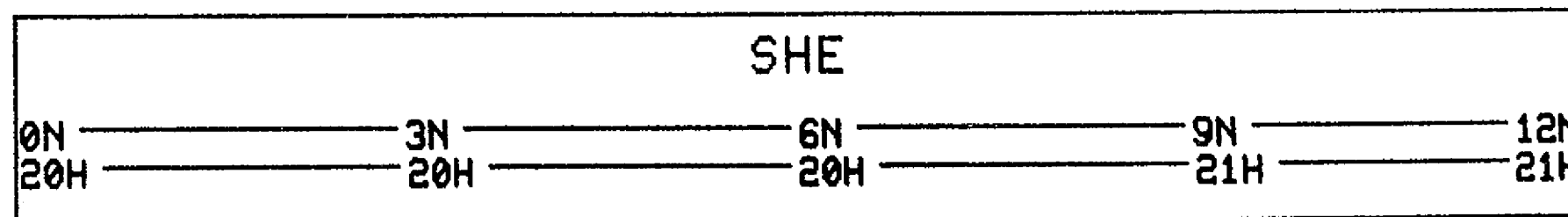


S

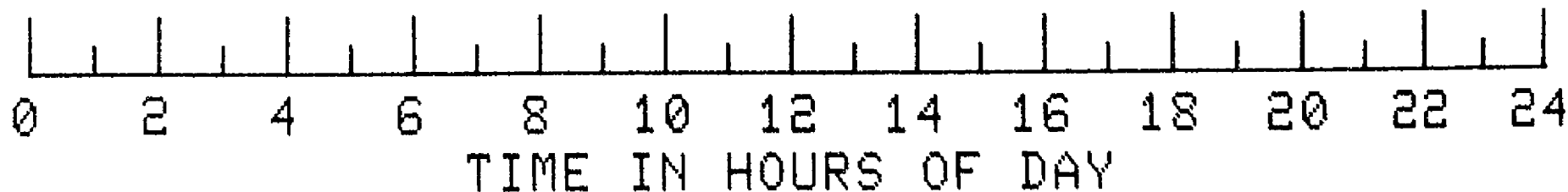
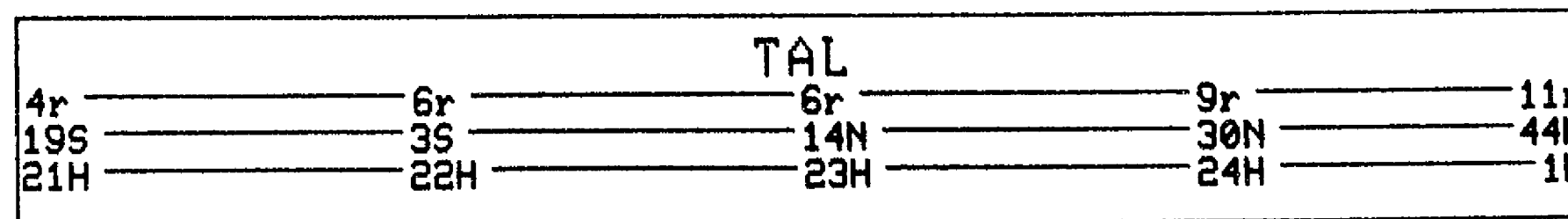
IMP-J



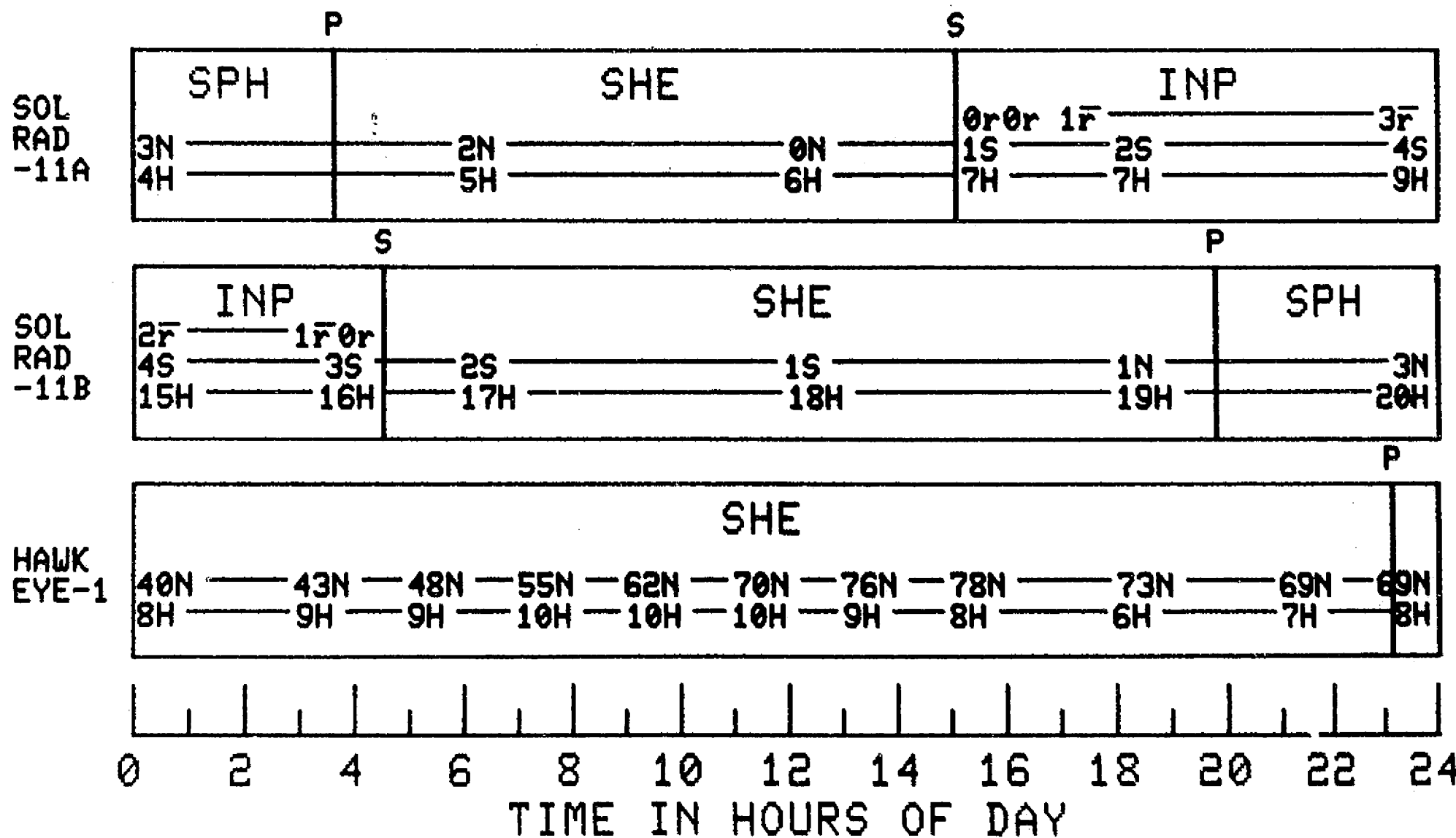
IMP-H



VELA
-5B

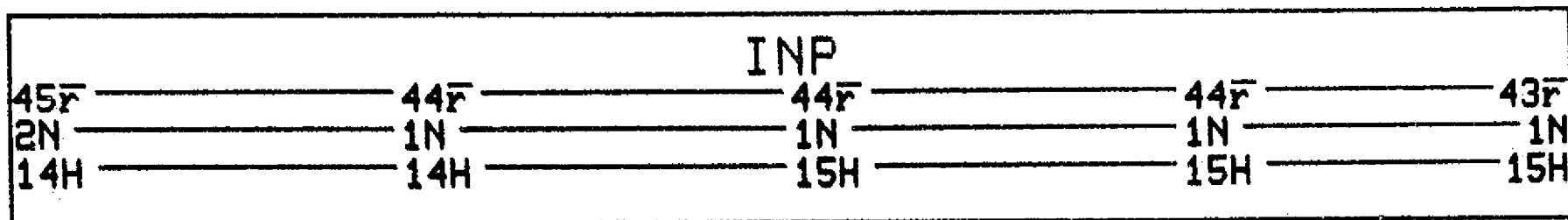


DAY 51 1977

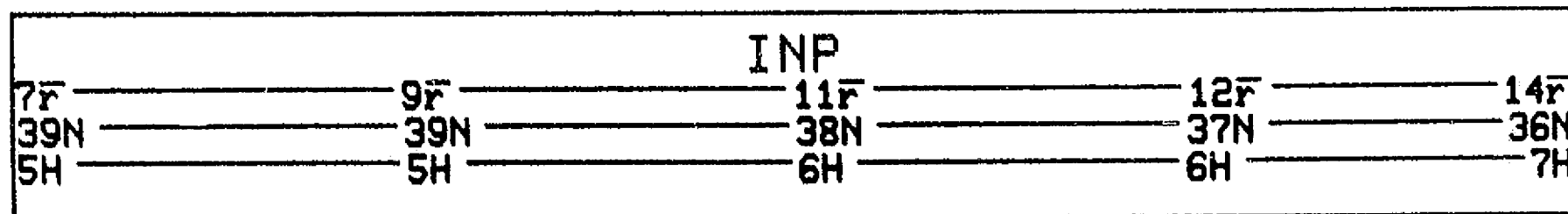


DAY 52 1977

MOON

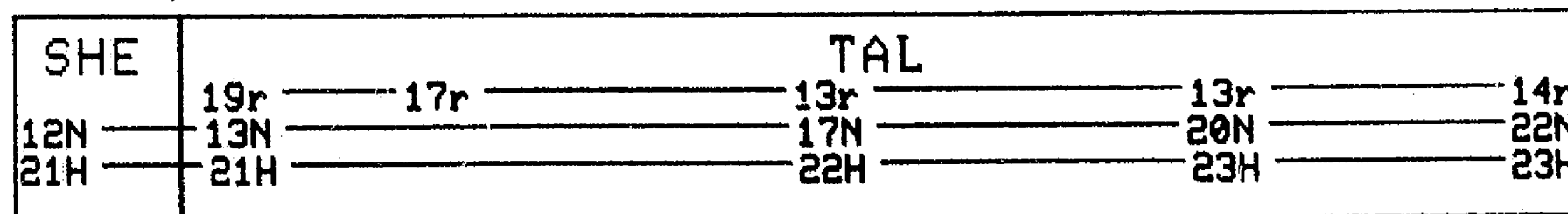


IMP-J



P

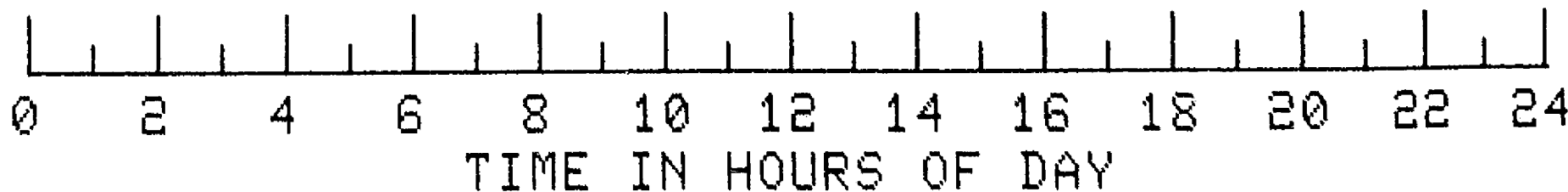
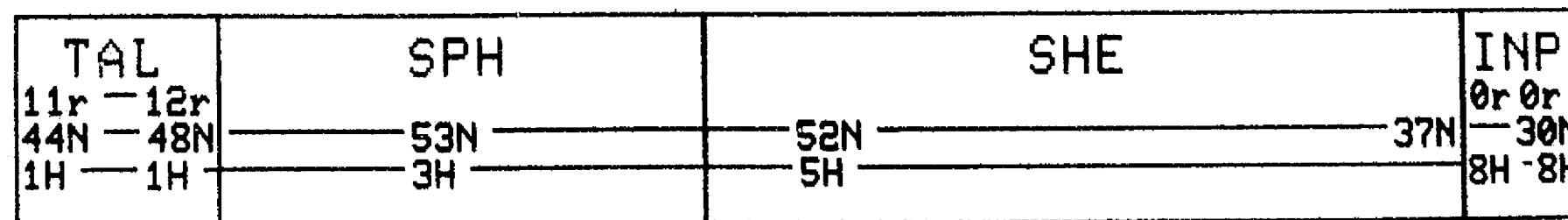
IMP-H



P

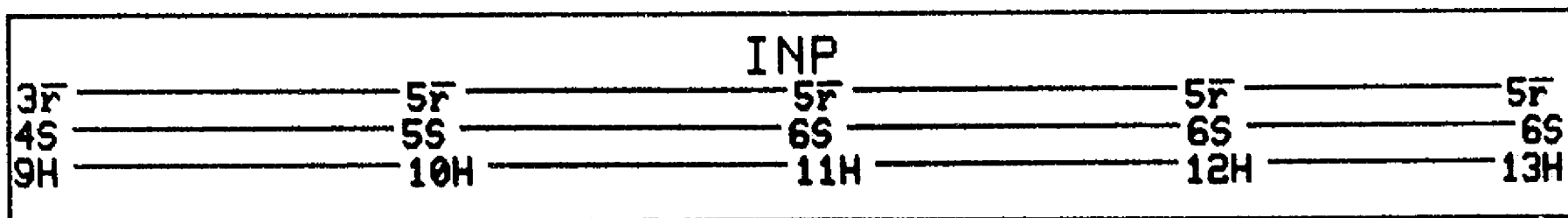
S

VELA
-5B

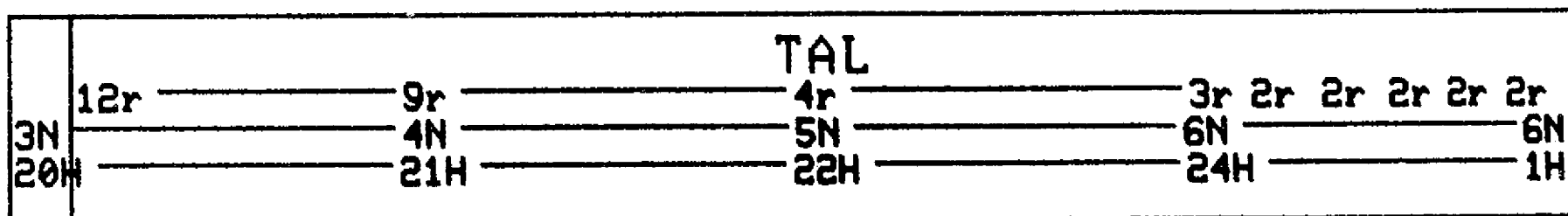


DAY 52 1977

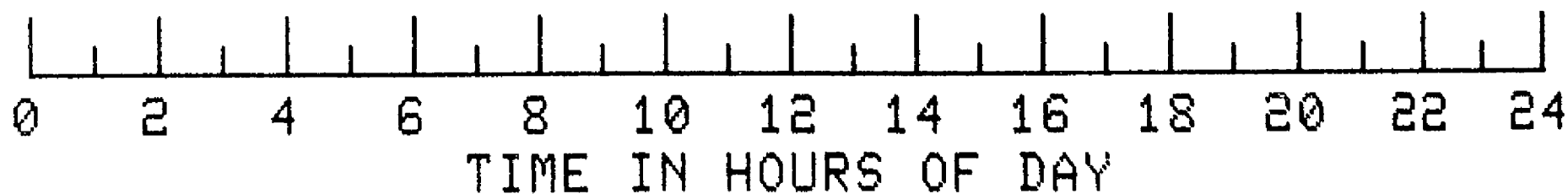
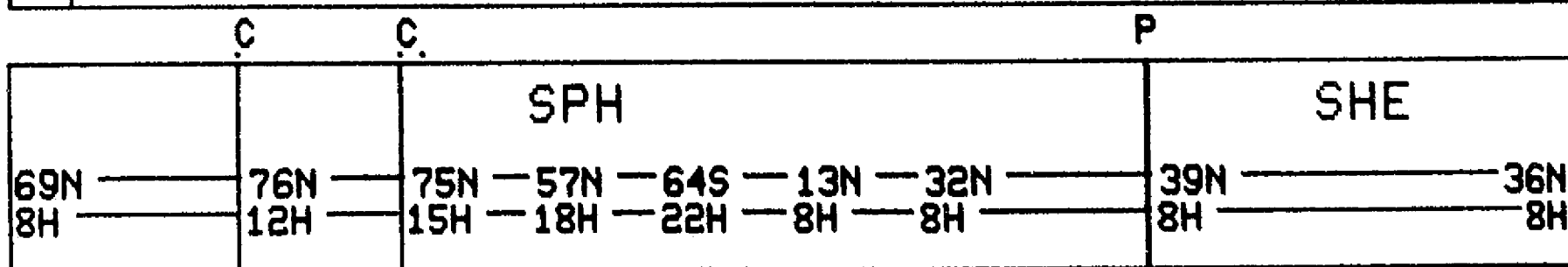
SOL
RAD
-11A



SOL
RAD
-11B

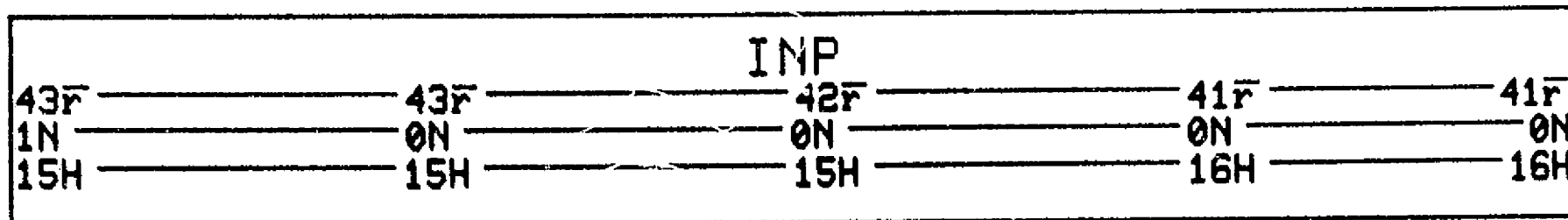


HAWK
EYE-1

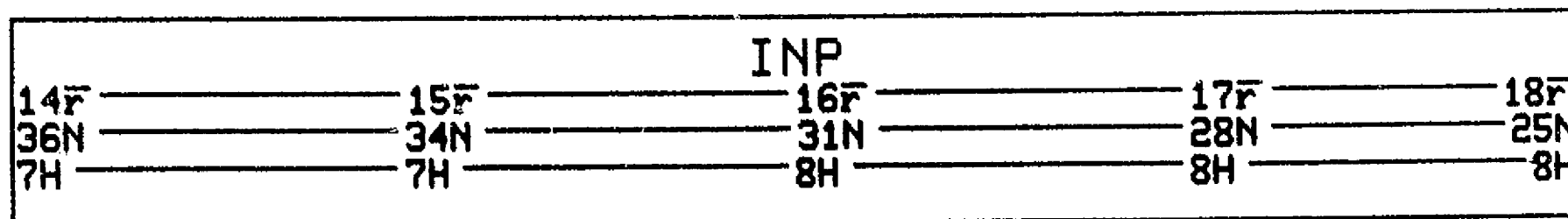


DAY 53 1977

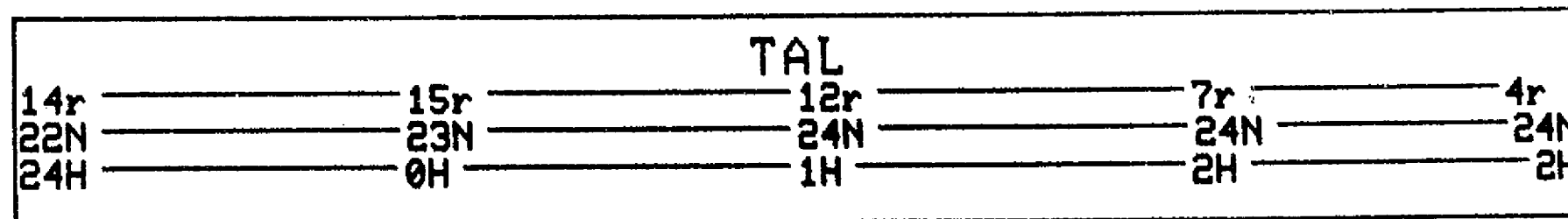
MOON



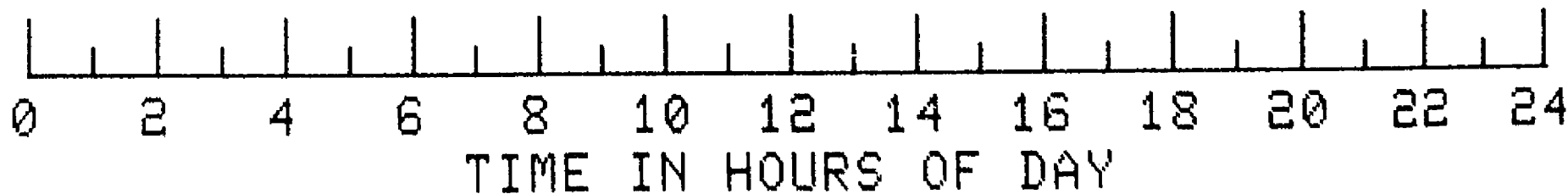
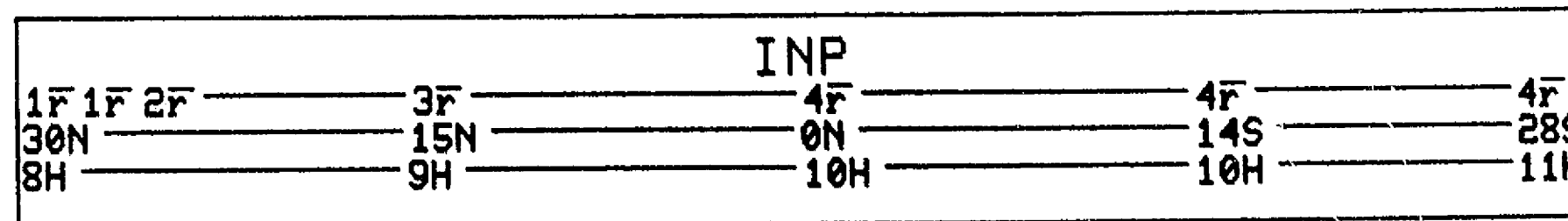
IMP-J



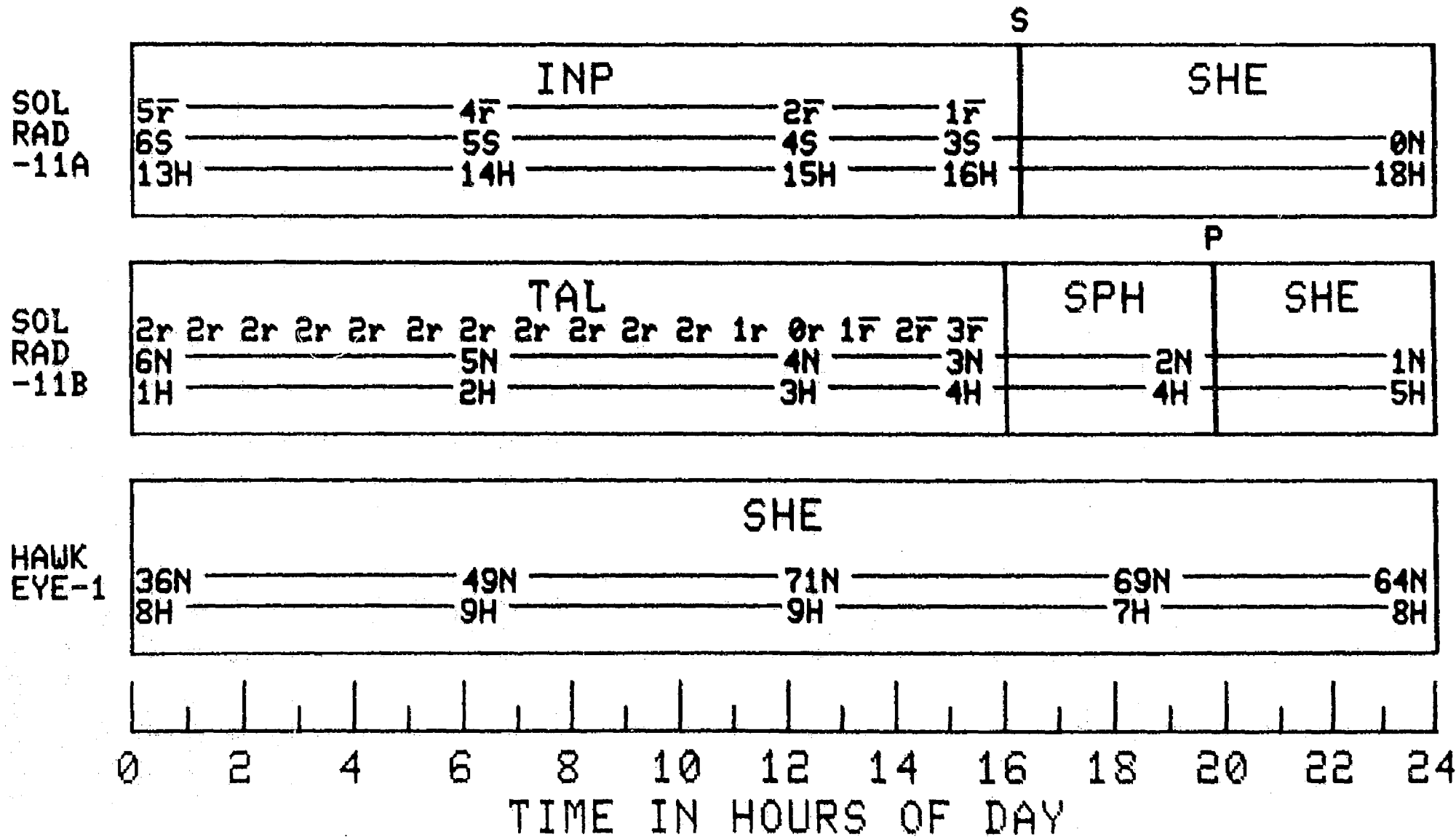
IMP-H



VELA
-5B

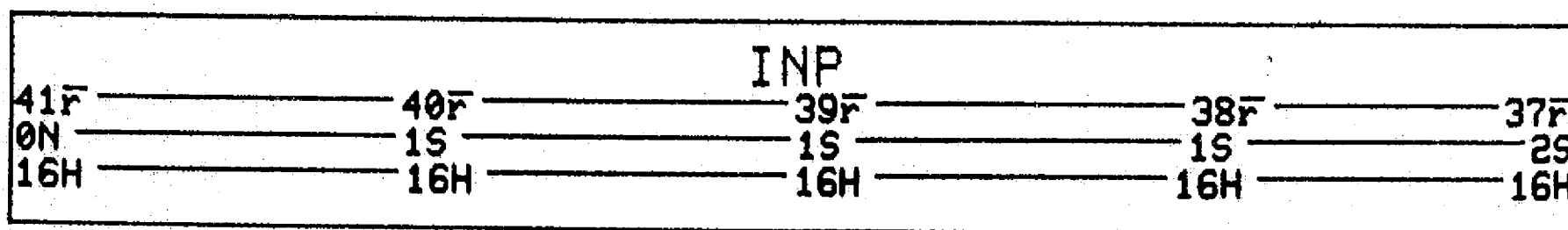


DAY 53 1977

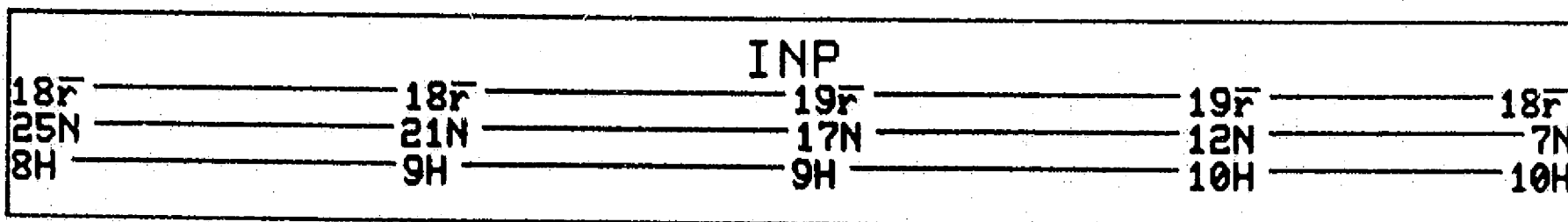


DAY 54 1977

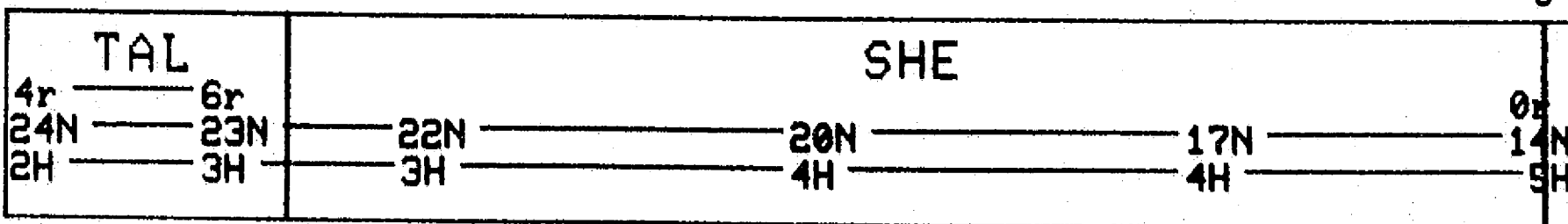
MOON



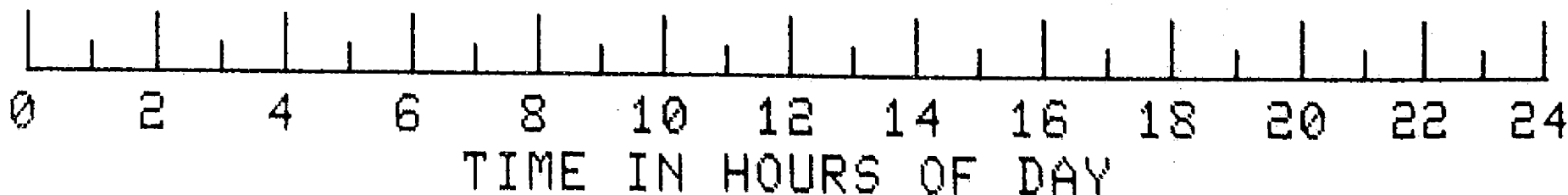
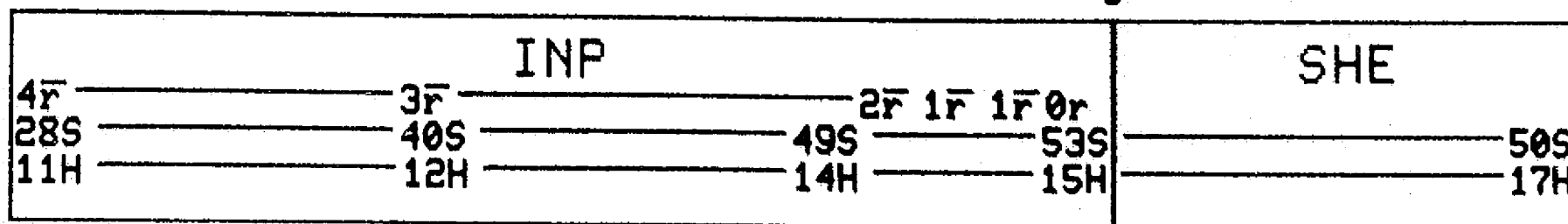
IMP-J



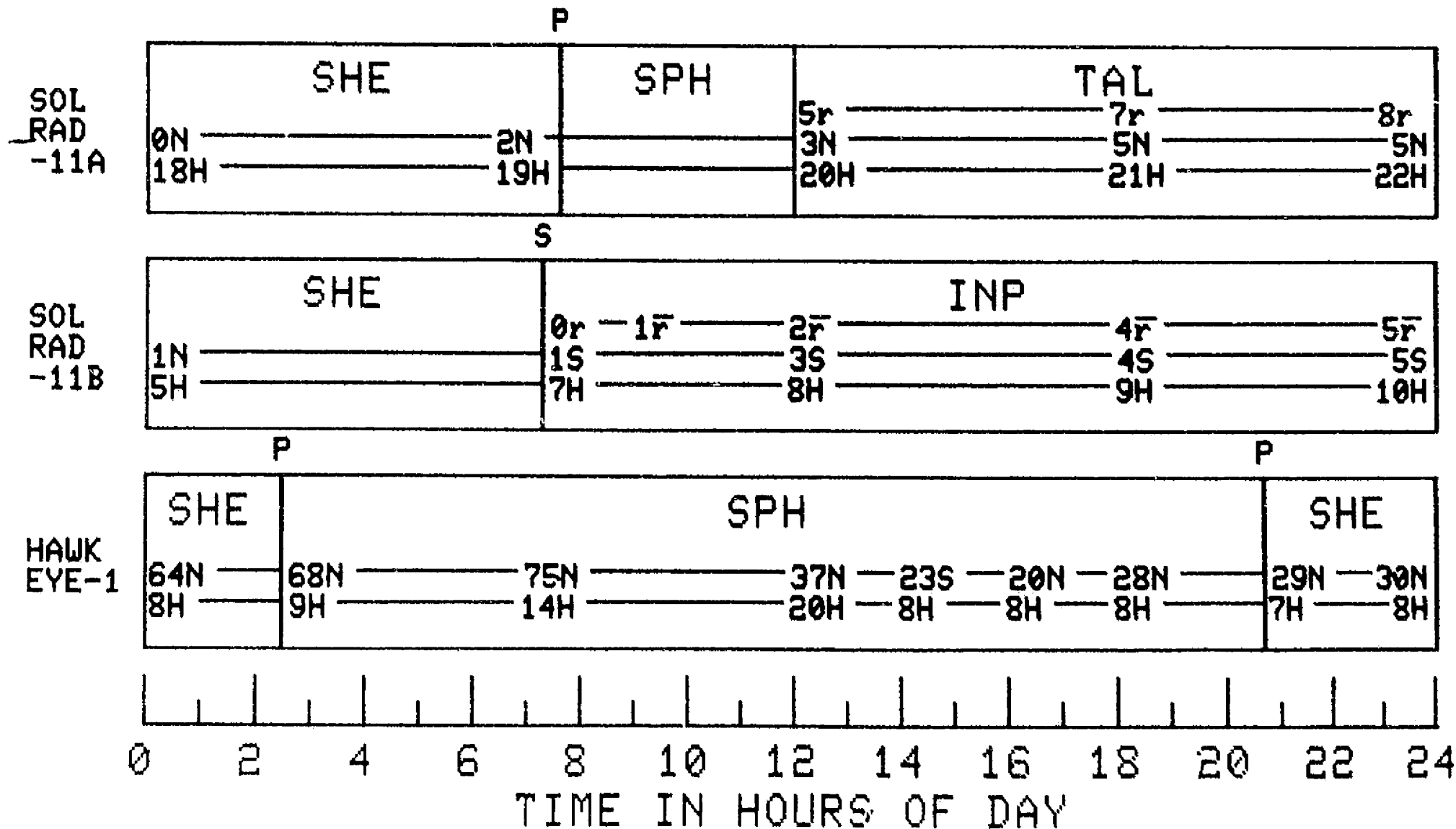
IMP-H



UELA
-5B

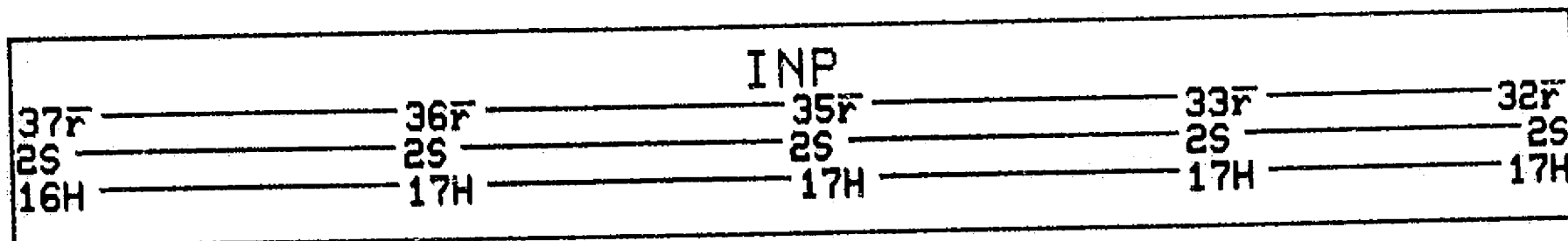


DAY 54 1977

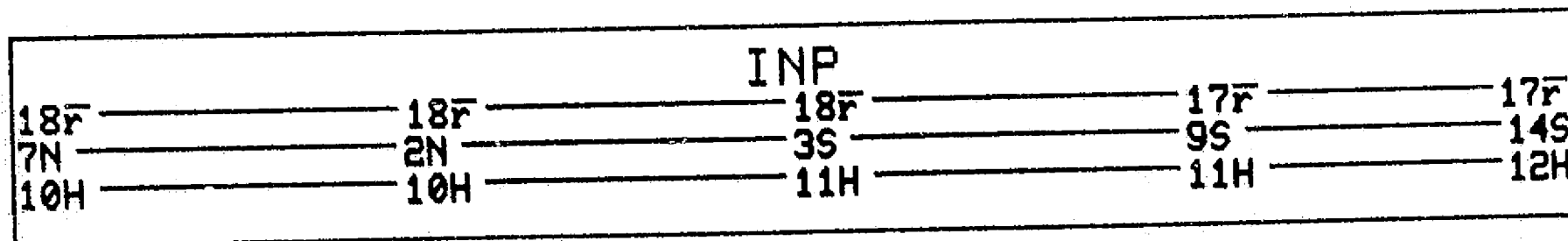


DAY 55 1977

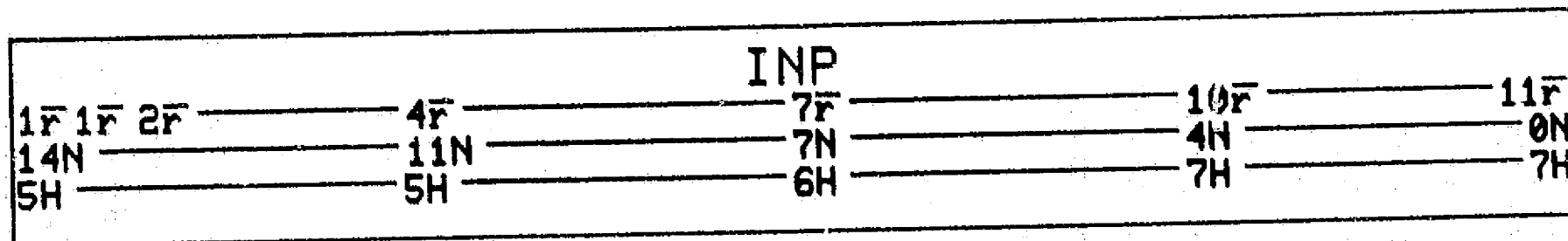
MOON



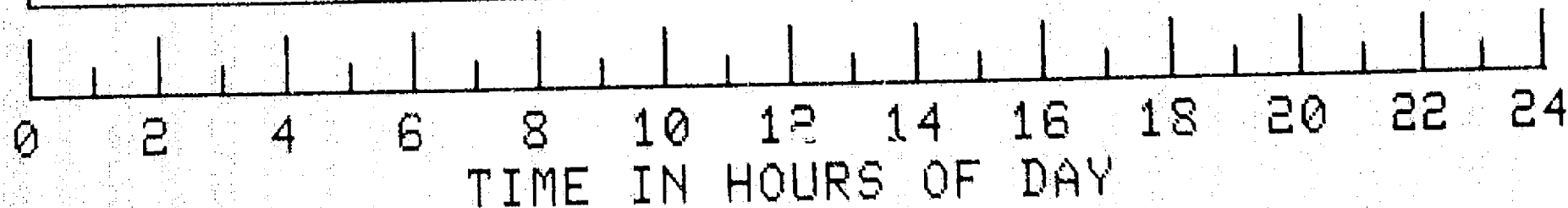
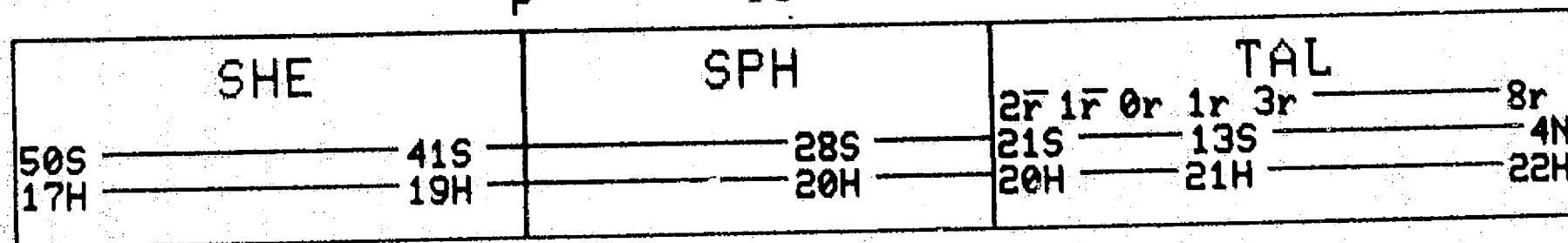
IMP-J



IMP-H

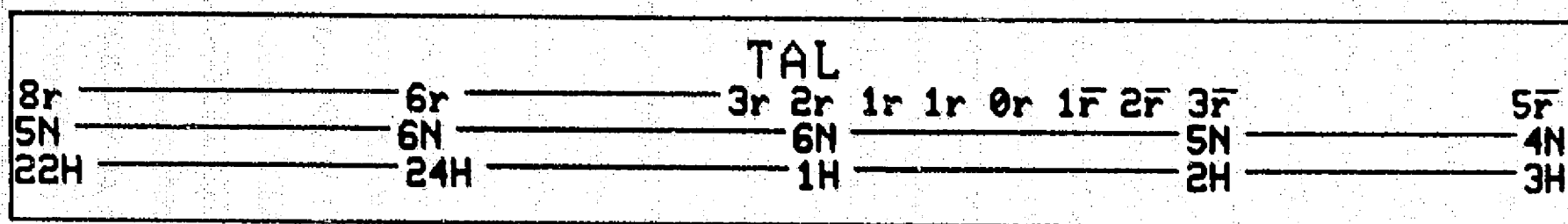


VELA
-5B

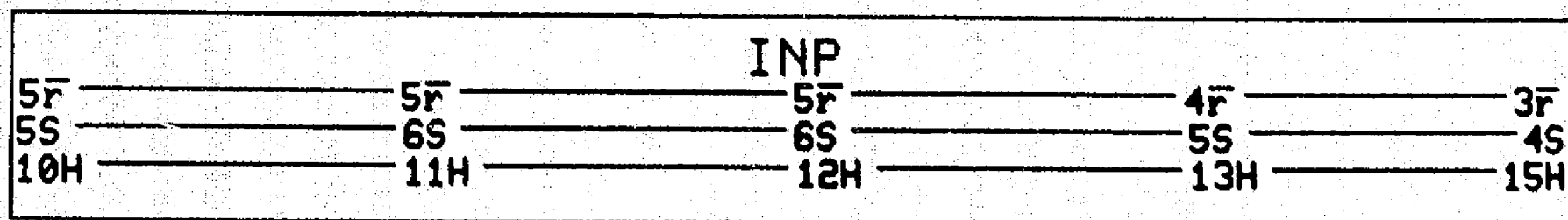


DAY 55 1977

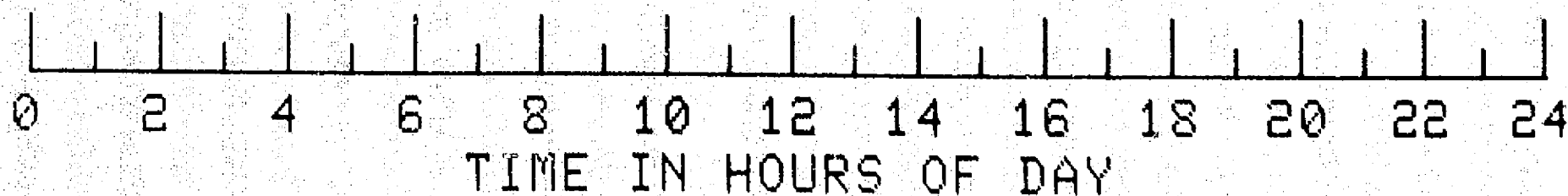
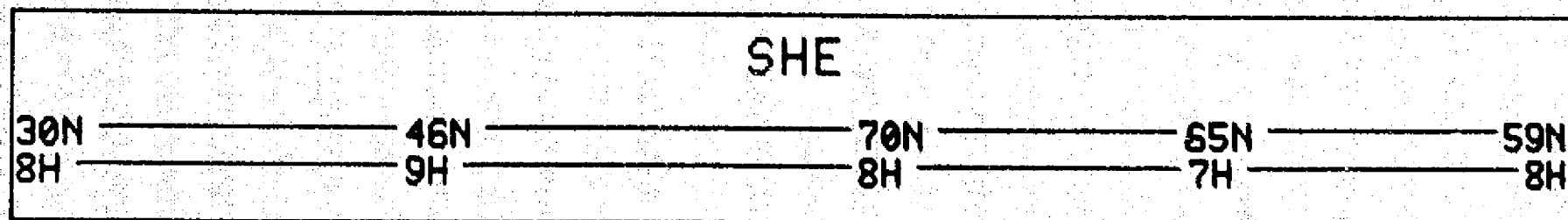
SOL
RAD
-11A



SOL
RAD
-11B

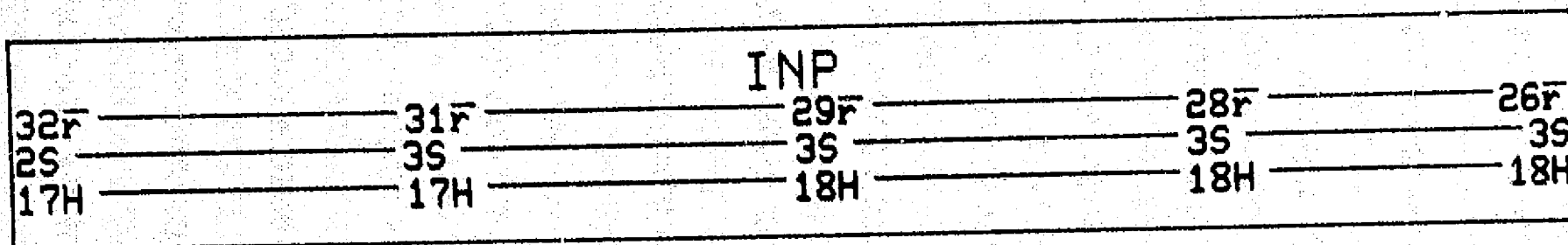


HAWK
EYE-1

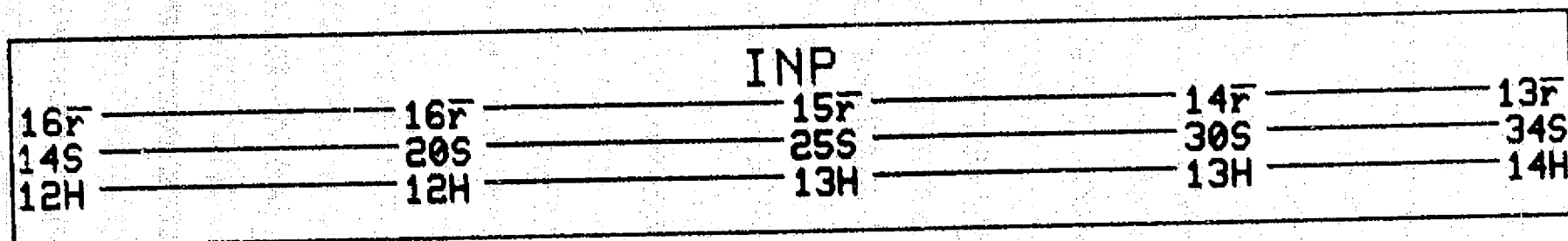


DAY 56 1977

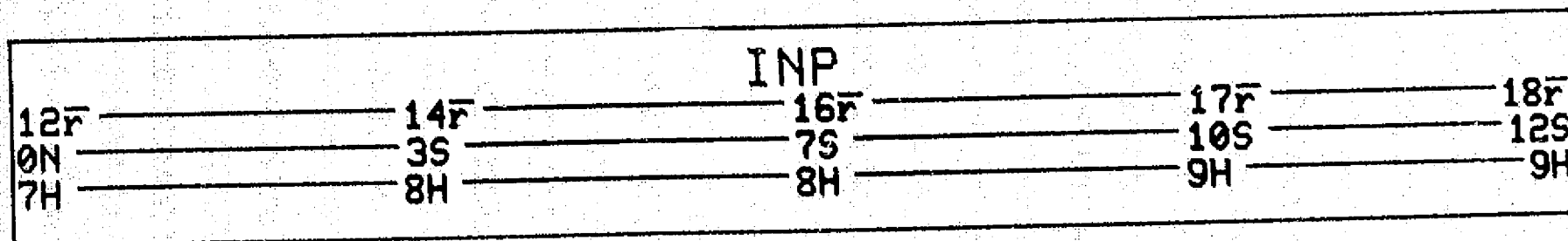
MOON



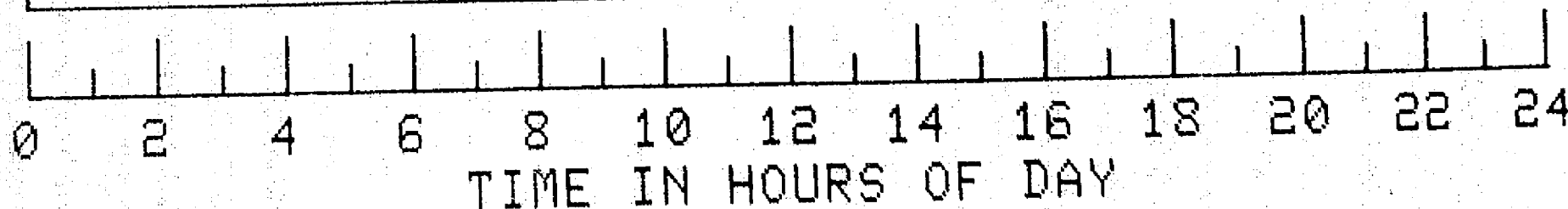
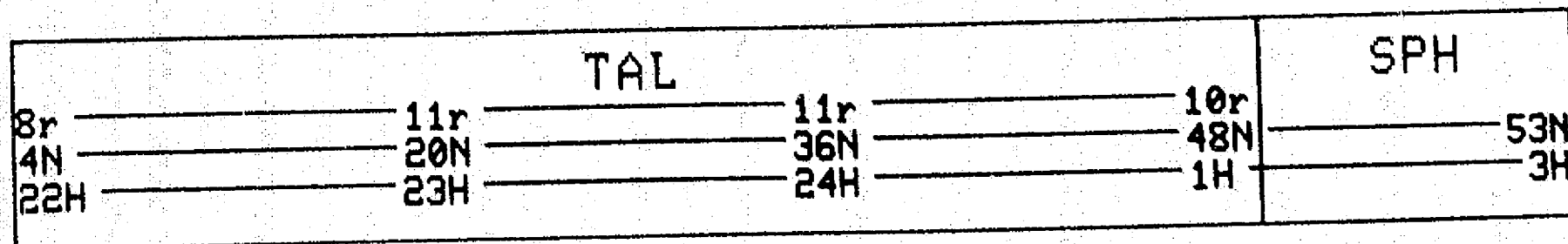
IMP-J



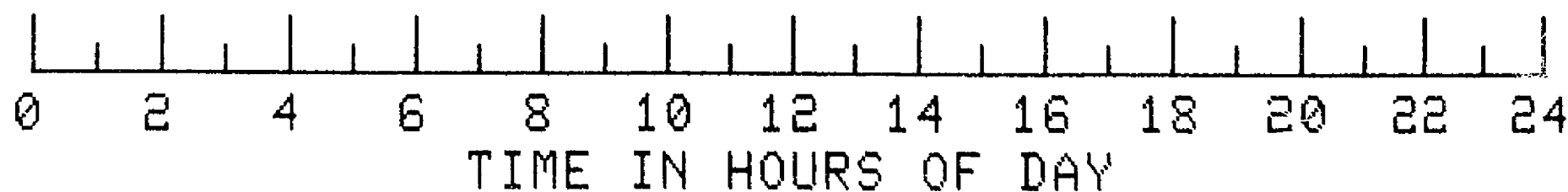
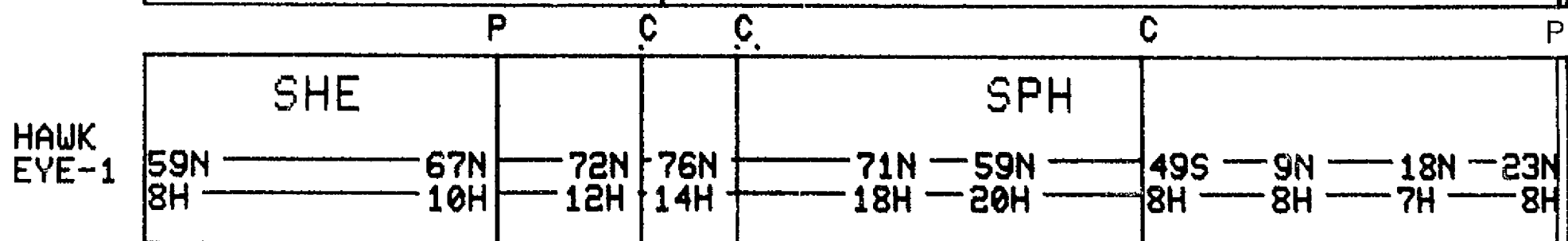
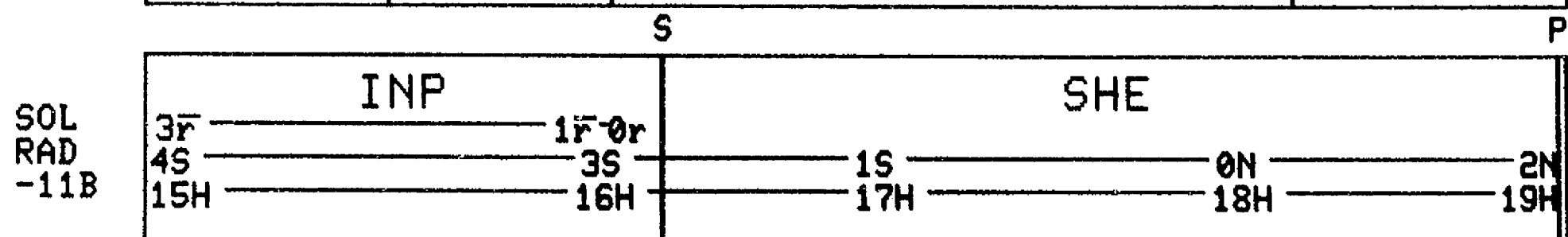
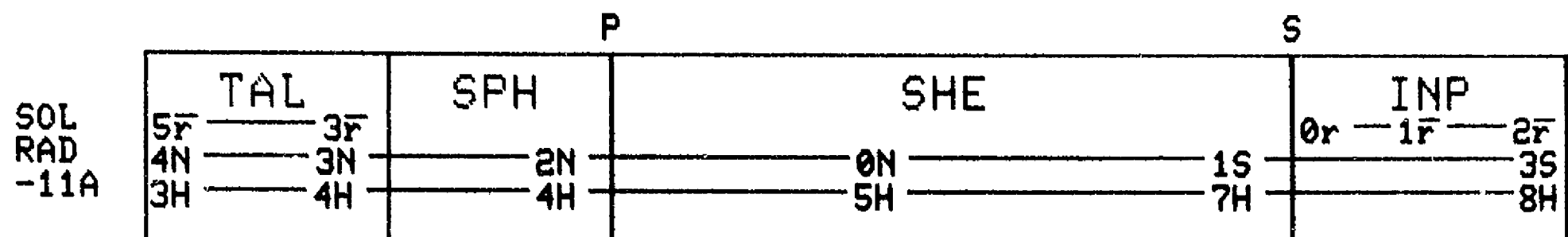
IMP-H



VELA
-5B

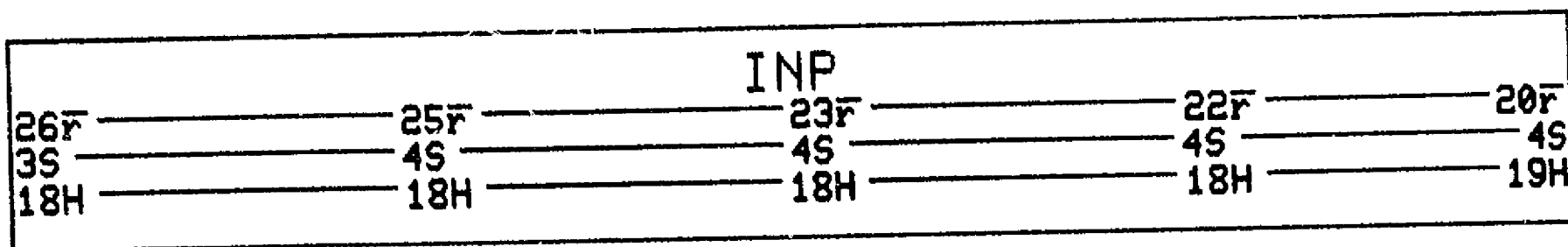


DAY 56 1977

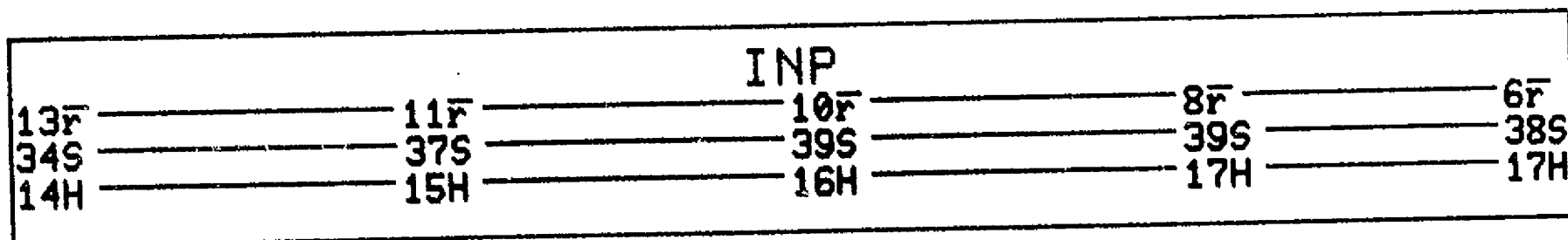


DAY 57 1977

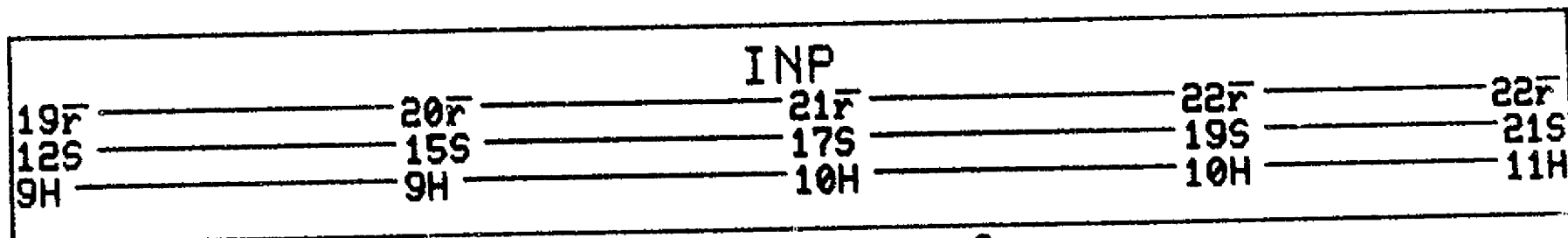
MOON



IMP-J



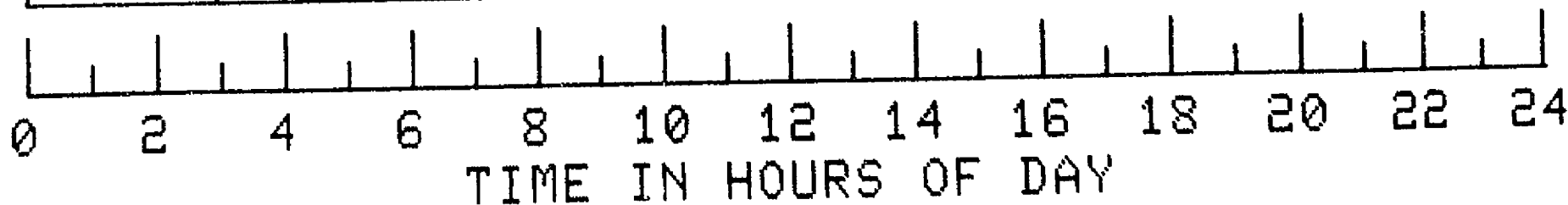
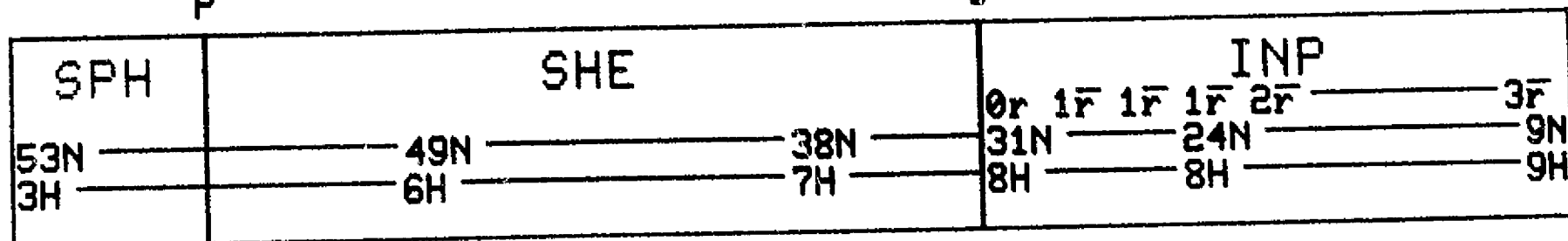
IMP-H



P

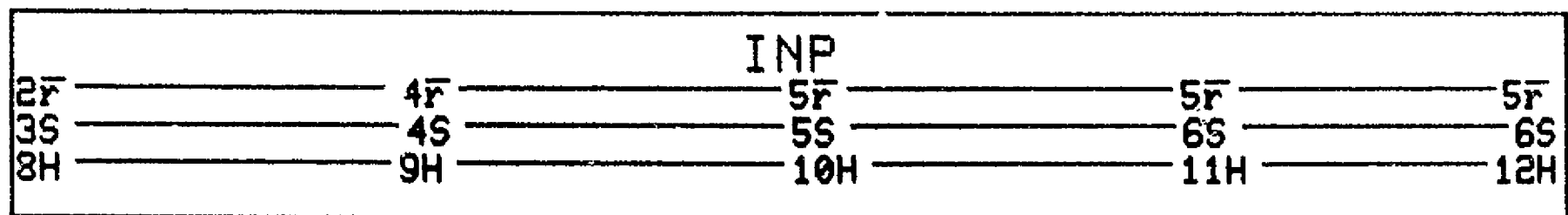
S

VELA
-5B

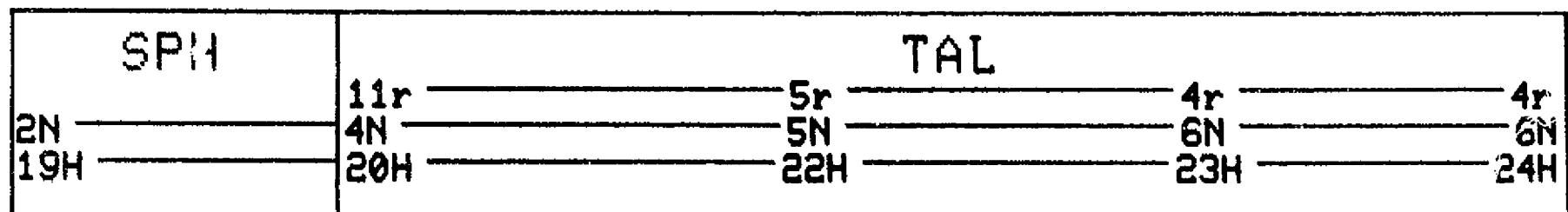


DAY 57 1977

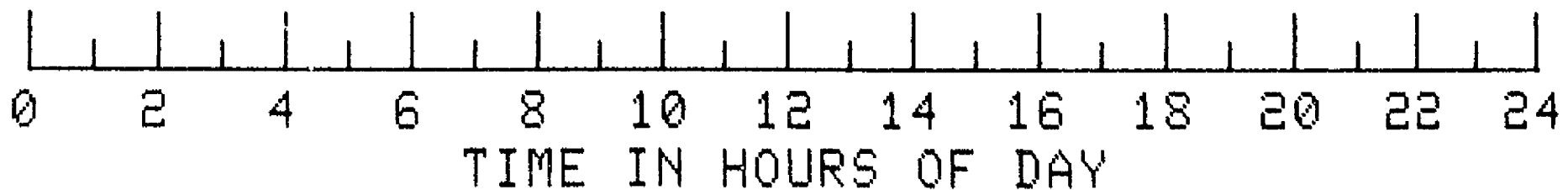
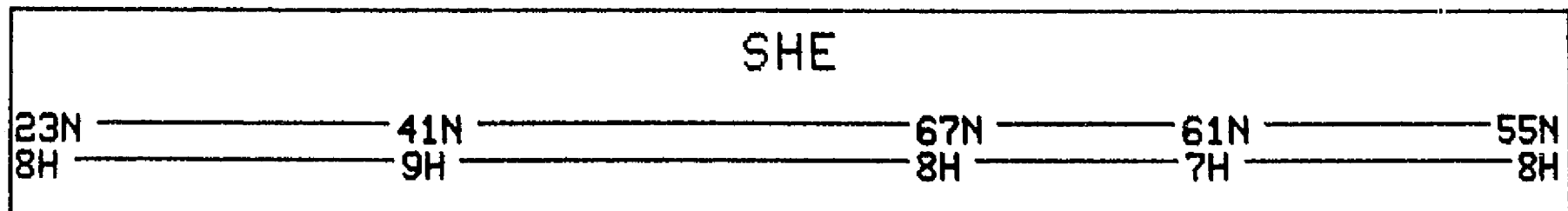
SOL
RAD
-11A



SOL
RAD
-11B

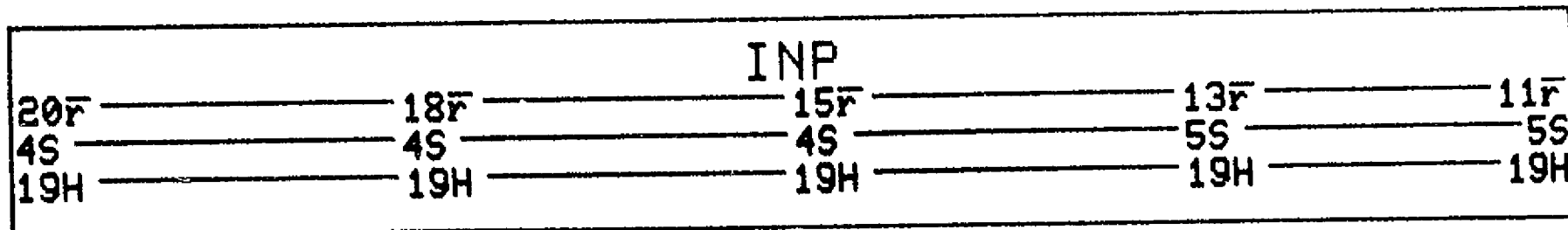


HAWK
EYE-1



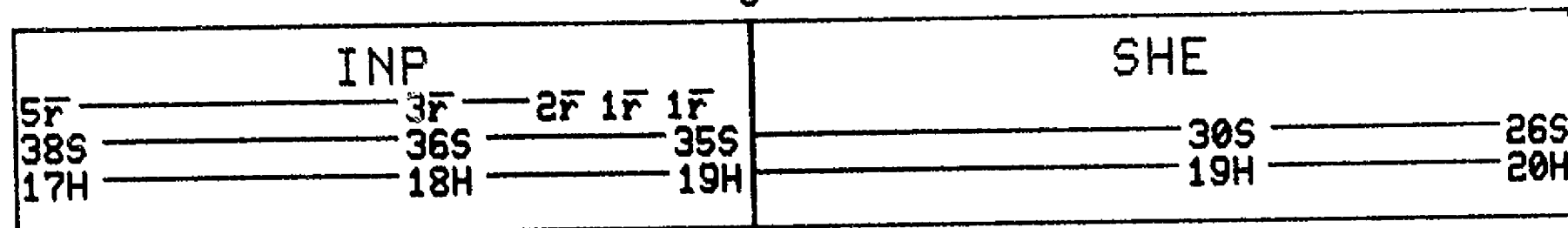
DAY 58 1977

MOON

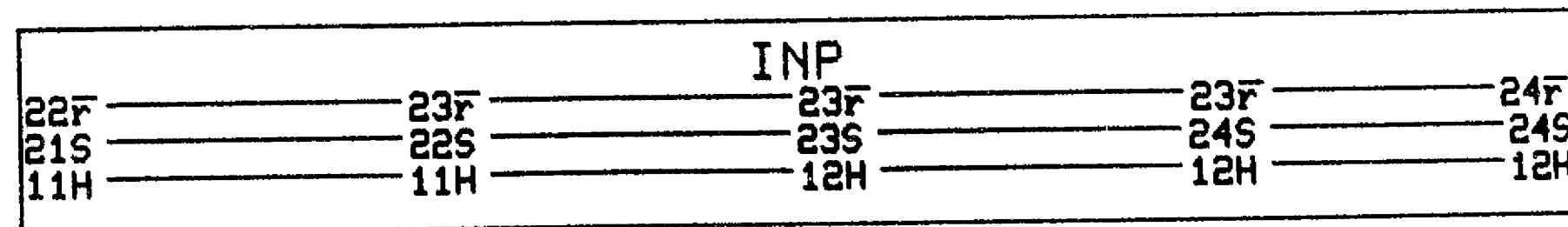


S

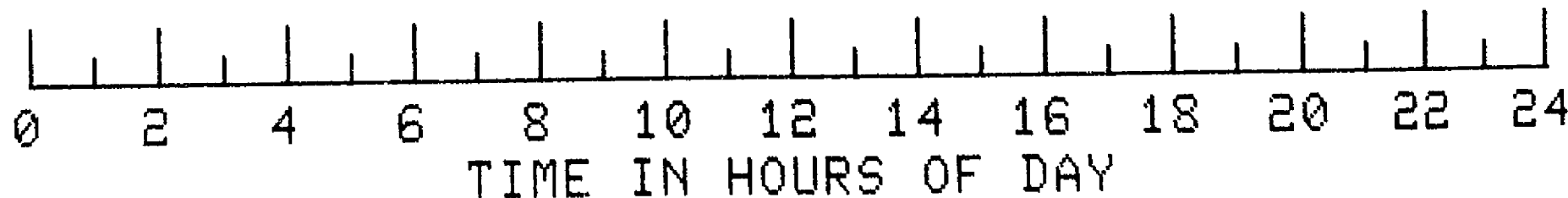
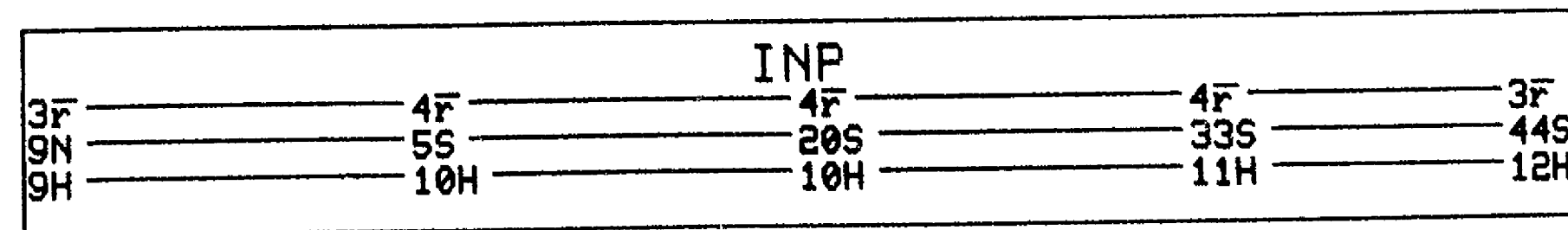
IMP-J



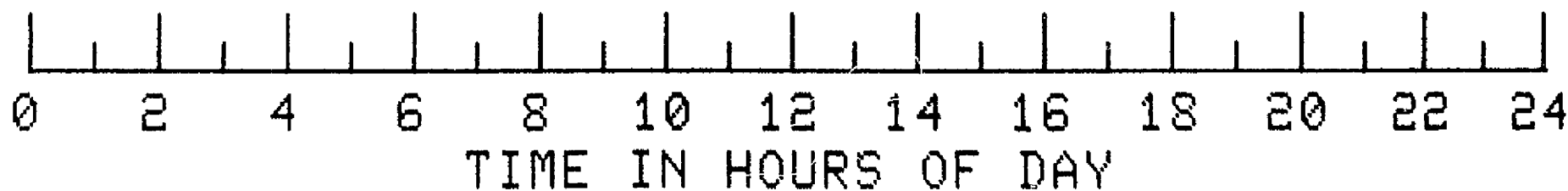
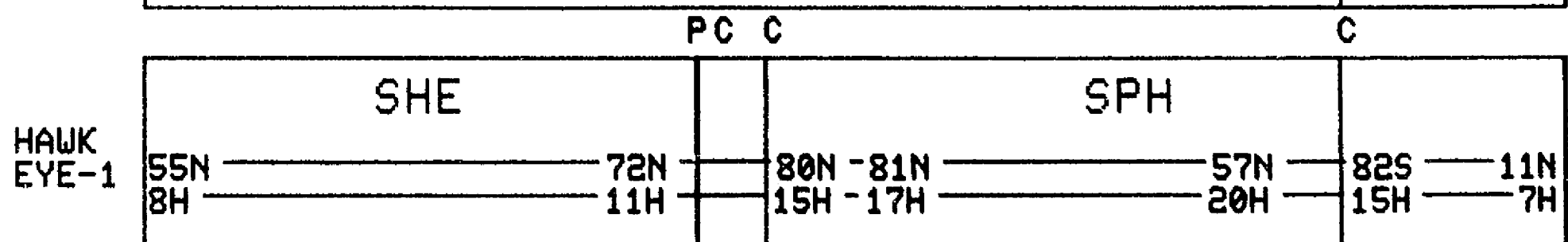
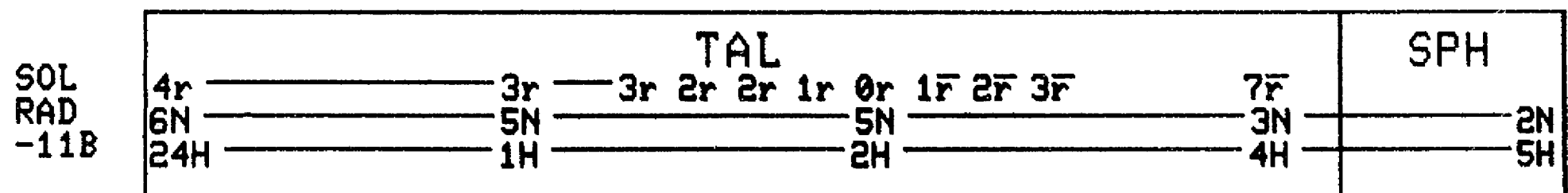
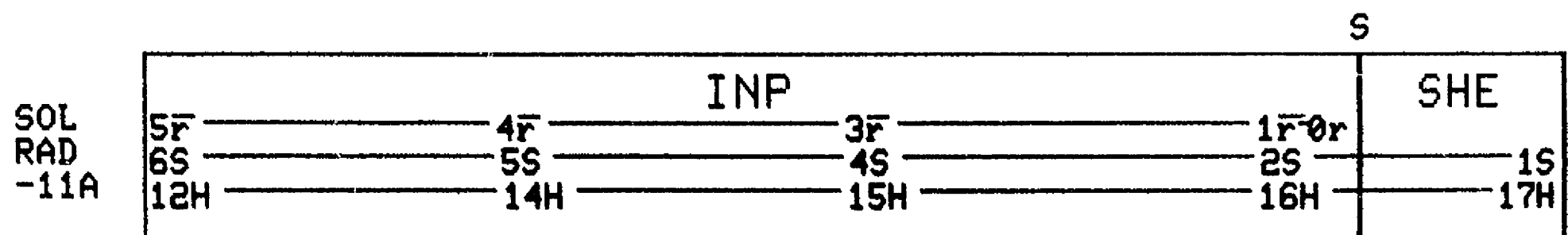
IMP-H



VELA
-5B

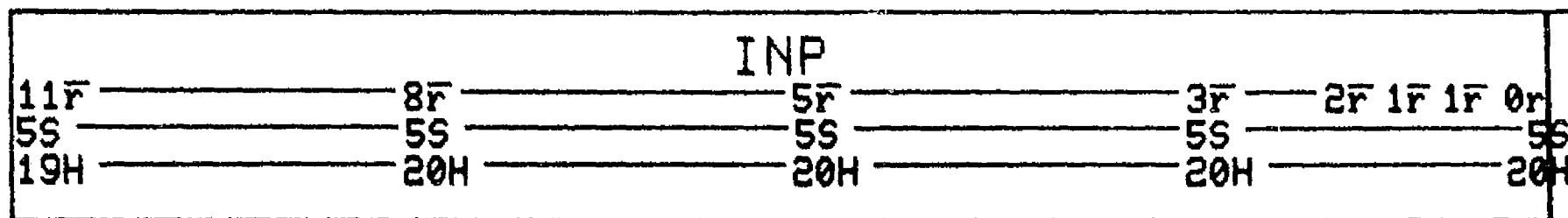


DAY 58 1977

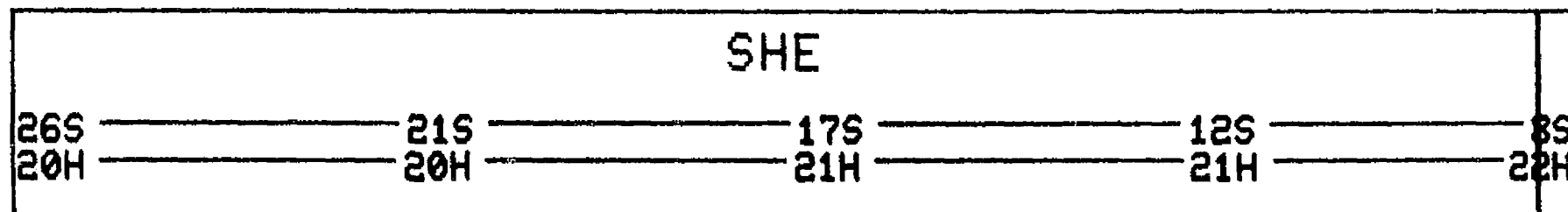


DAY 59 1977

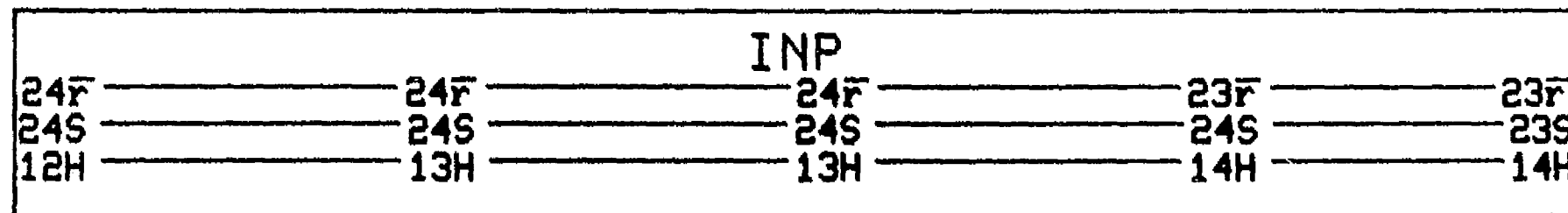
MOON



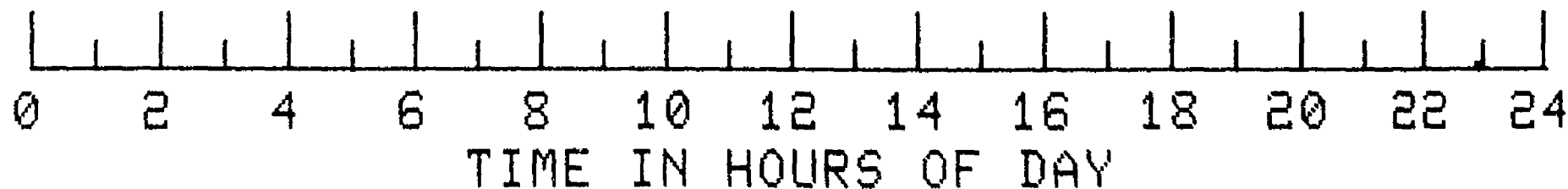
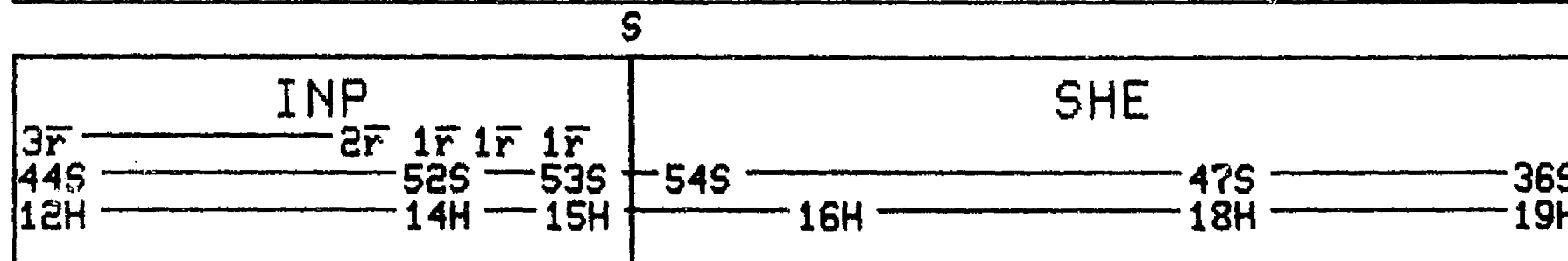
IMP-J



IMP-H



VELA
-5B



DAY 59 1977

P

SOL
RAD
-11A

| SHE | | | | SPH | | TAL | | | |
|-----|----|--|-----|-----|--|-----|-----|--|-----|
| 1S | | | | 3N | | 6r | 7r | | 9r |
| 17H | 1N | | 18H | 19H | | 4N | 4N | | 5N |
| | | | | | | 20H | 20H | | 22H |

P

S

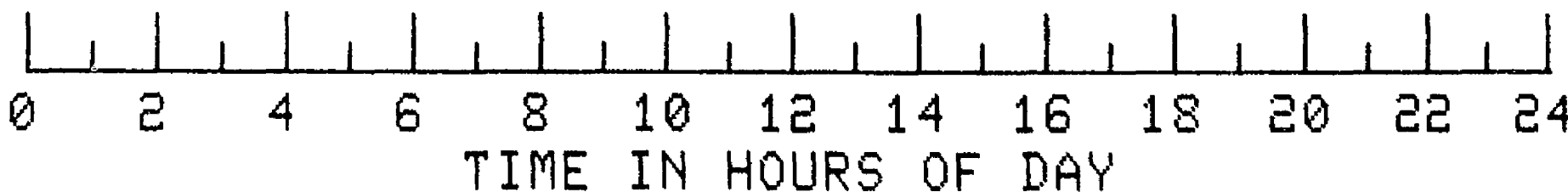
SOL
RAD
-11B

| SHE | | | | INP | | | | | |
|-----|----|--|----|-----|----|----|----|----|----|
| 2N | | | | 0r | 1F | | 3F | | 4F |
| 5H | 0N | | 6H | 2S | | 4S | | 5S | |
| | | | | 7H | | 8H | | 9H | |

P

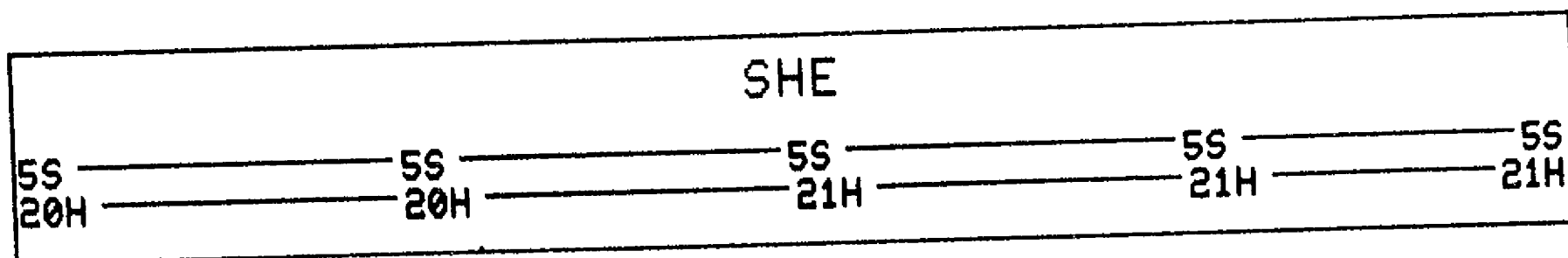
HAWK
EYE-1

| SPH | | SHE | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 11N | 19N | 28N | 36N | 45N | 54N | 61N | 63N | 61N | 57N | 52N | 51N |
| 7H | 8H | 8H | 8H | 9H | 9H | 8H | 7H | 7H | 7H | 7H | 7H |

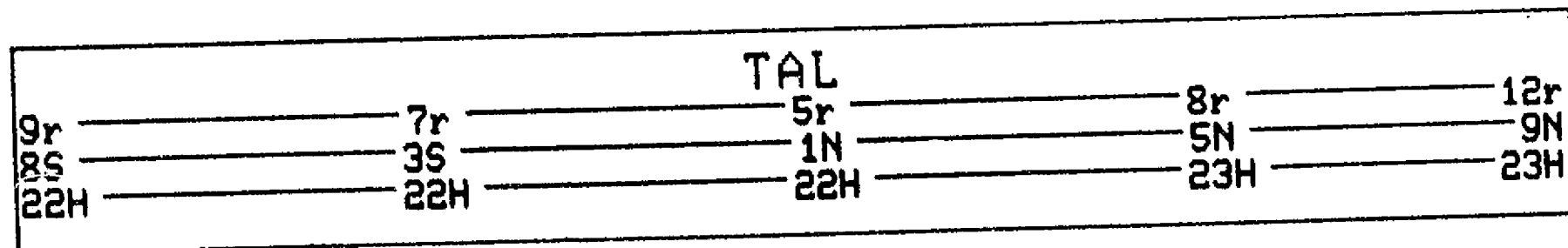


DAY 60 1977

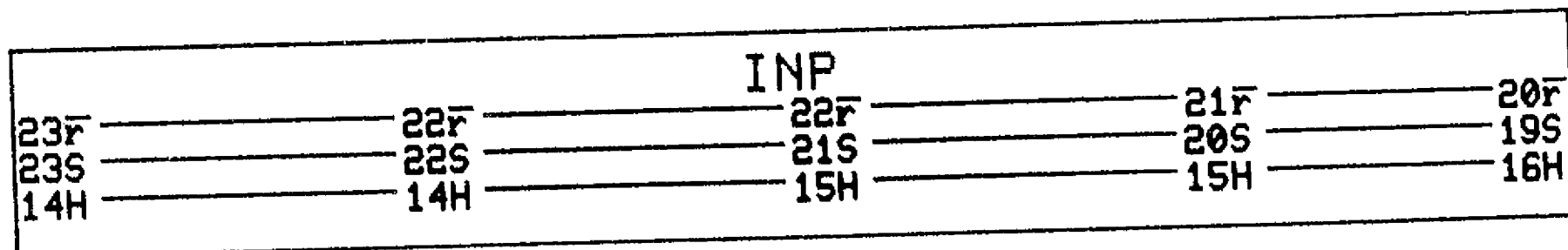
MOON



IMP-J

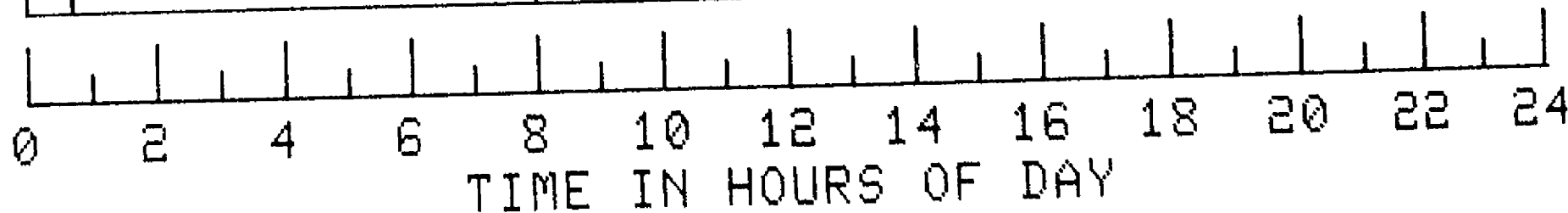
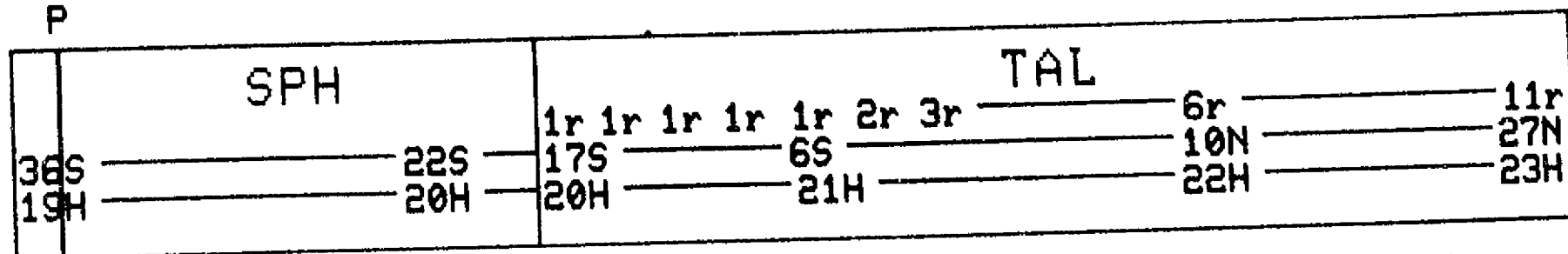


IMP-H



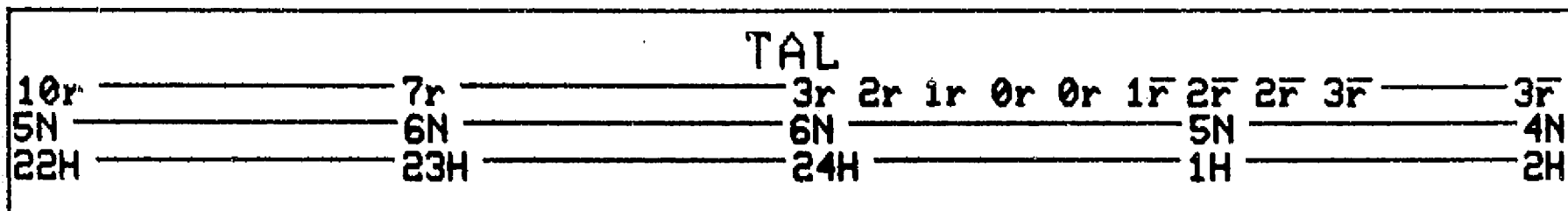
P

VELA
-5B

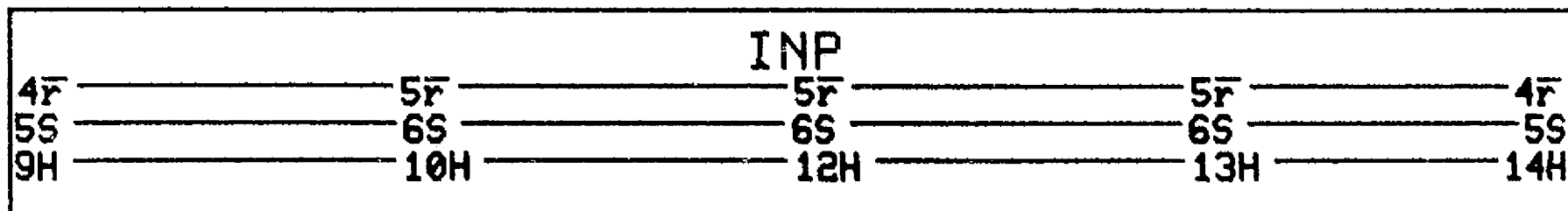


DAY 60 1977

SOL
RAD
-11A

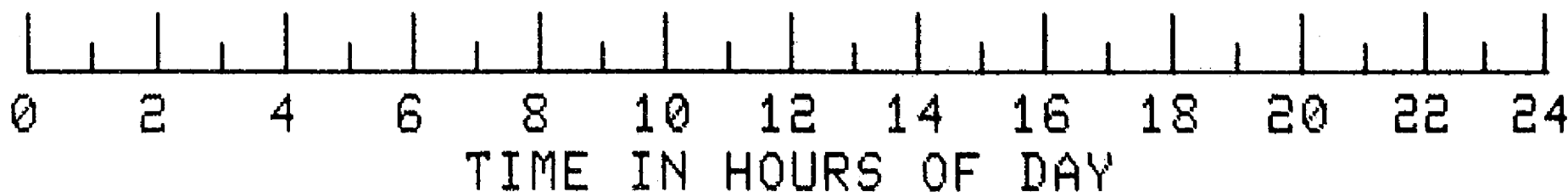
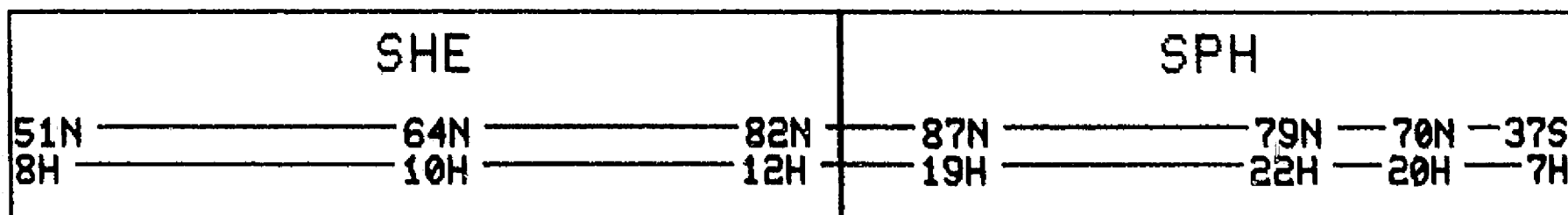


SOL
RAD
-11B



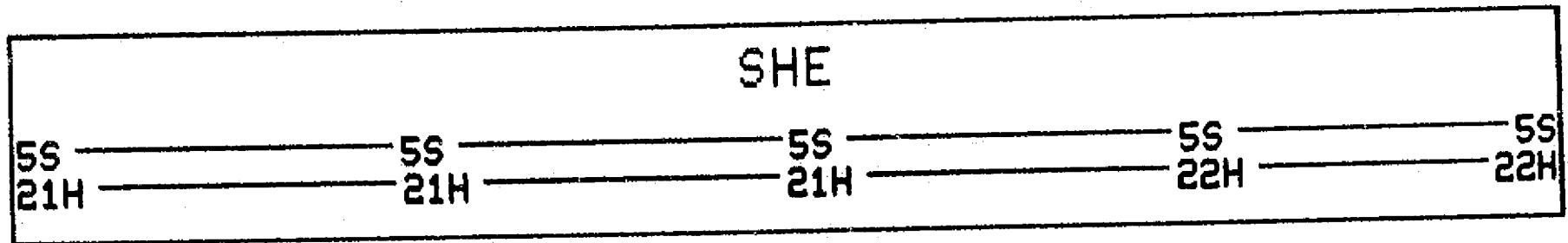
P

HAWK
EYE-1

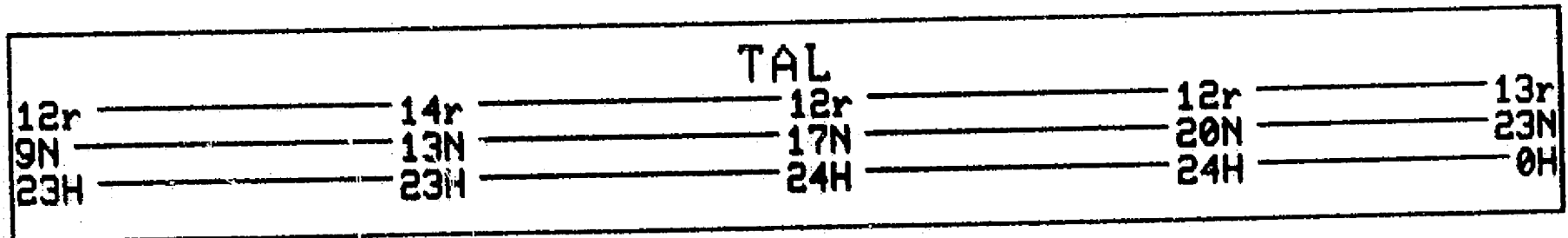


DAY 61 1977

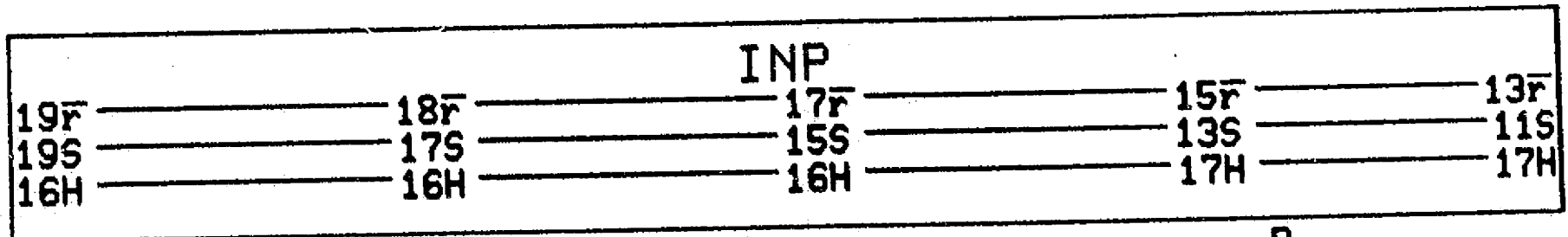
MOON



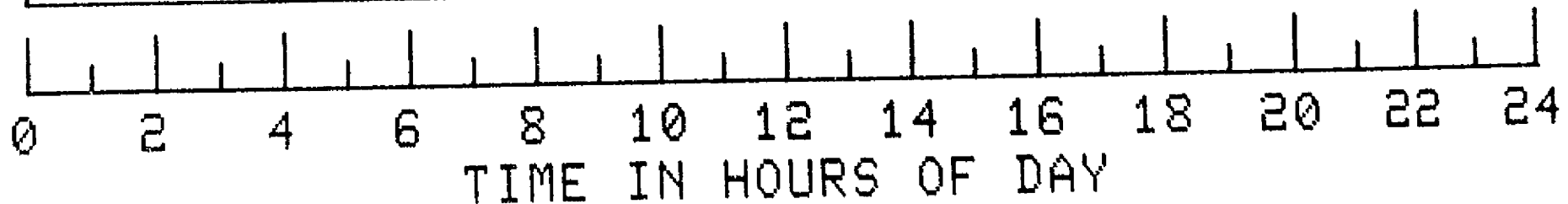
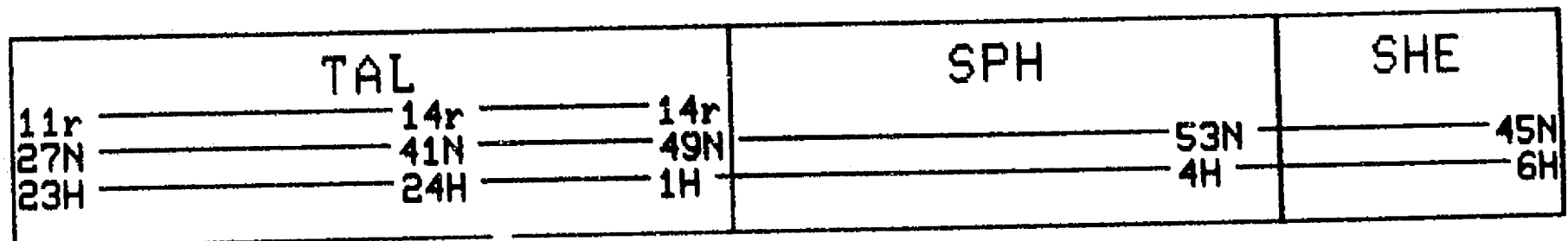
IMP-J



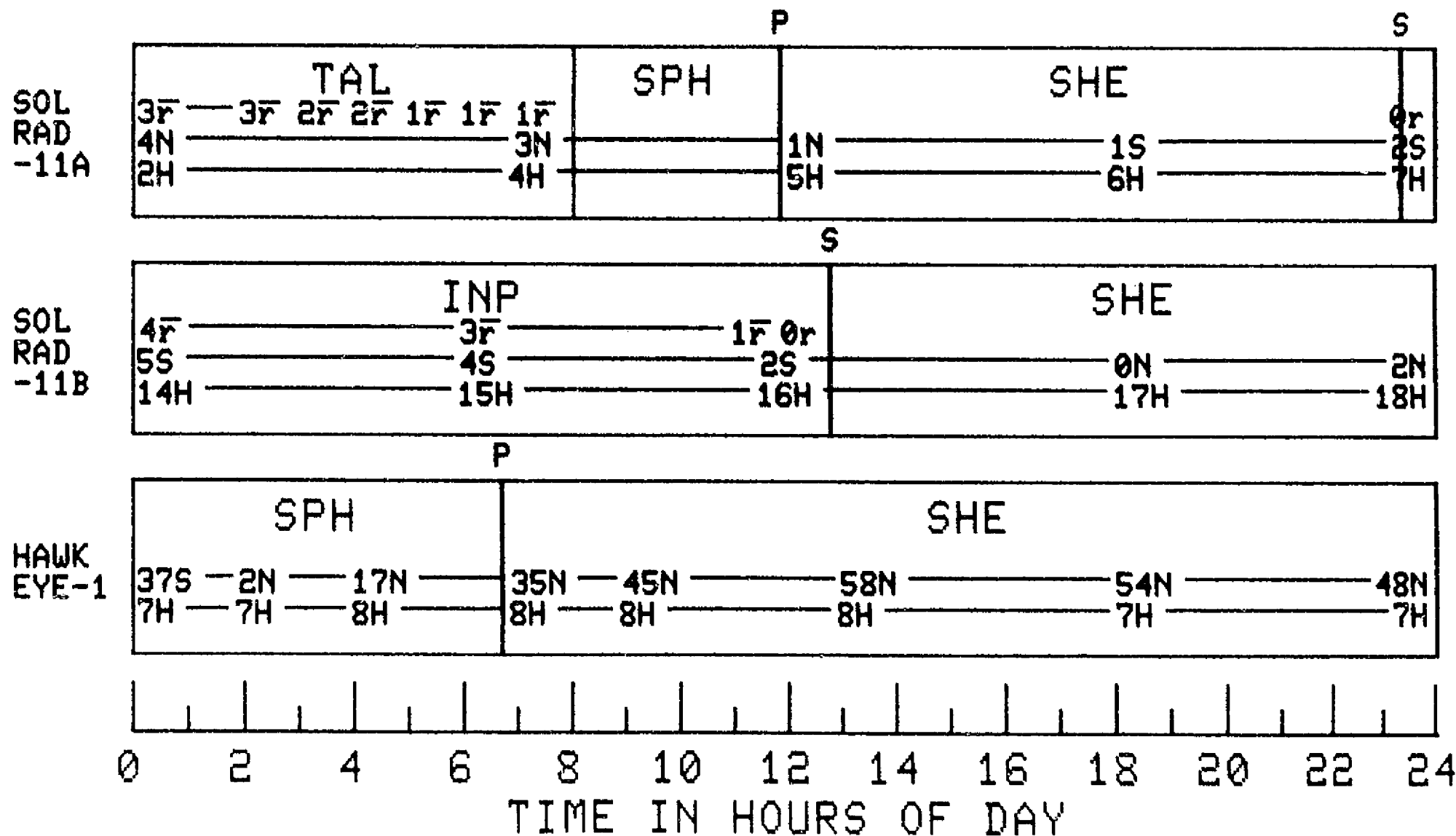
IMP-H



VELA
-5B

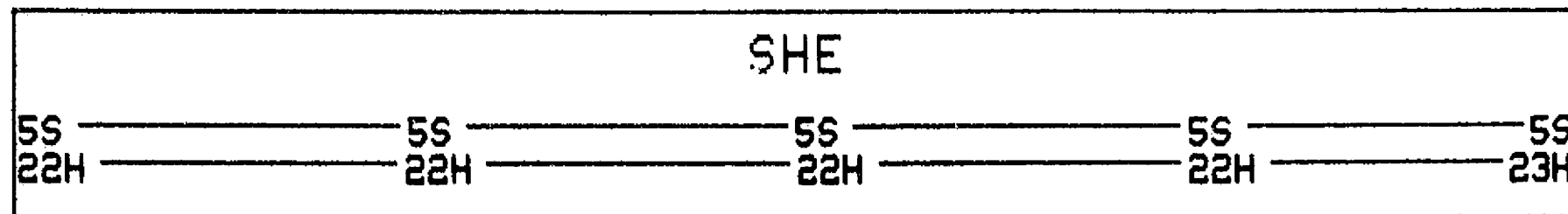


DAY 61 1977



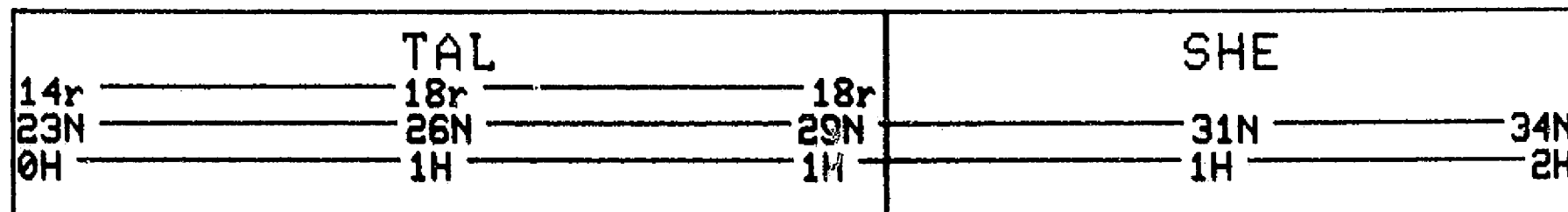
DAY 62 1977

MOON

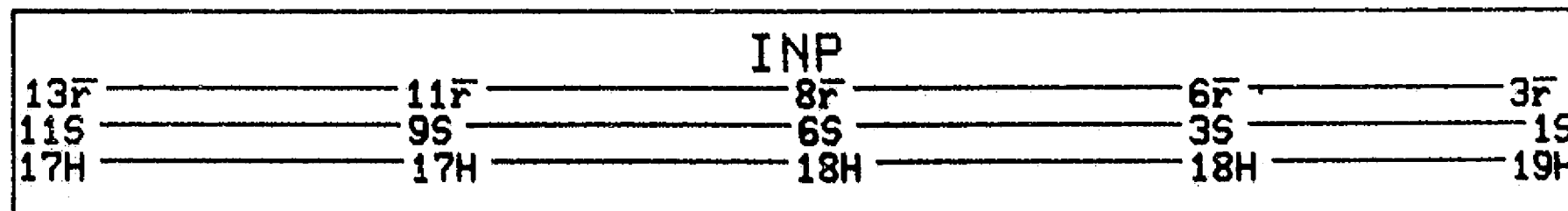


P

IMP-J

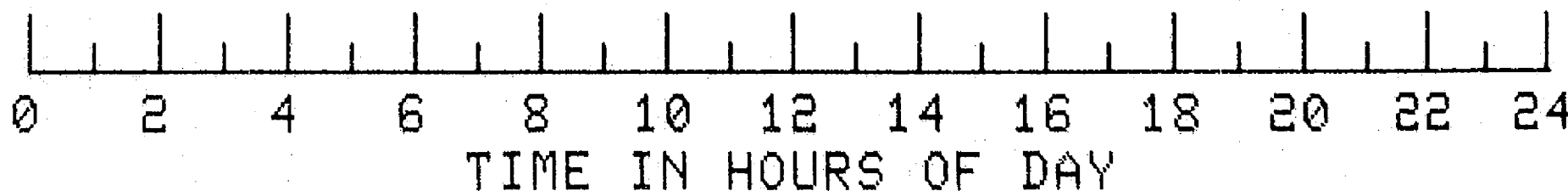
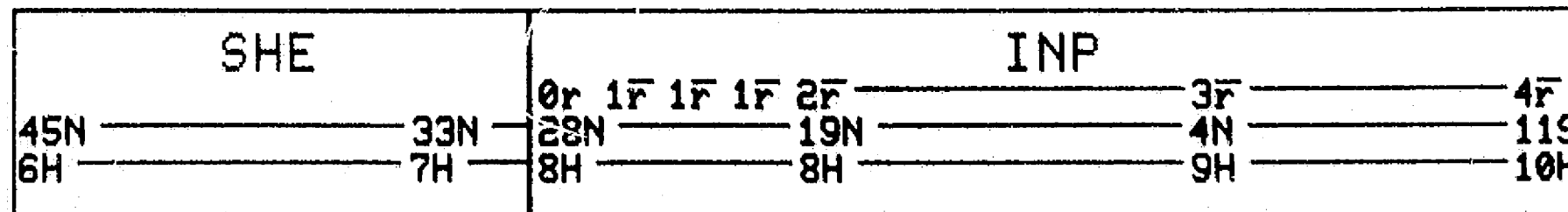


IMP-H



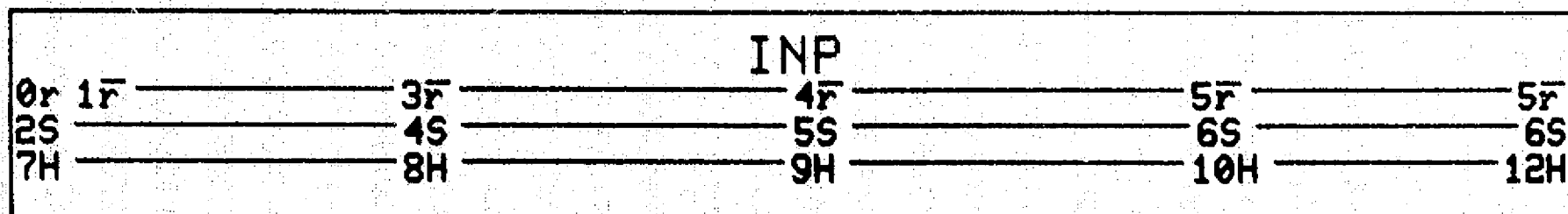
S

VELA
-5B



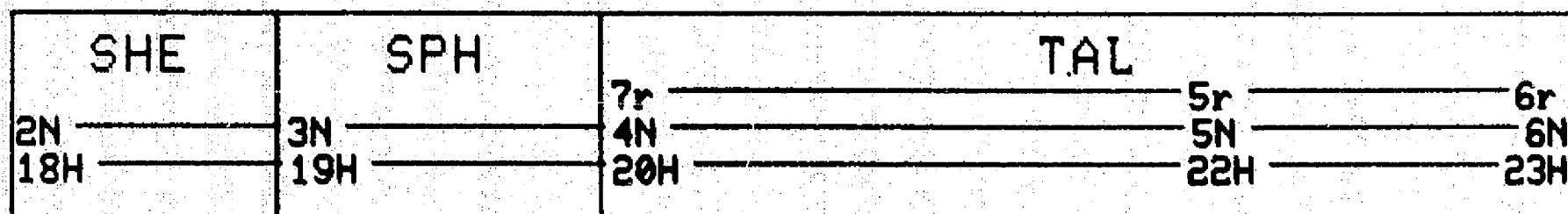
DAY 62 1977

SOL
RAD
-11A



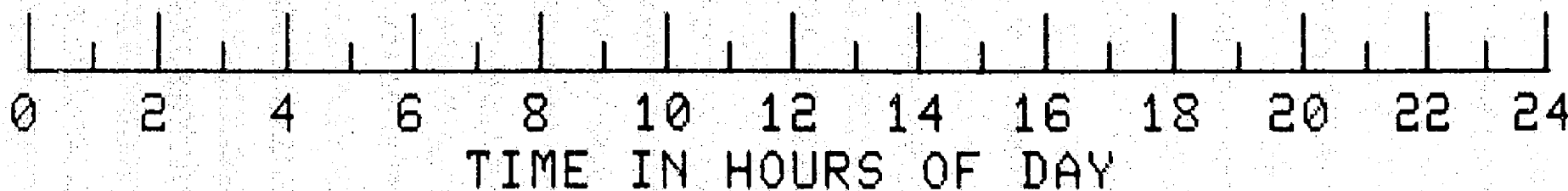
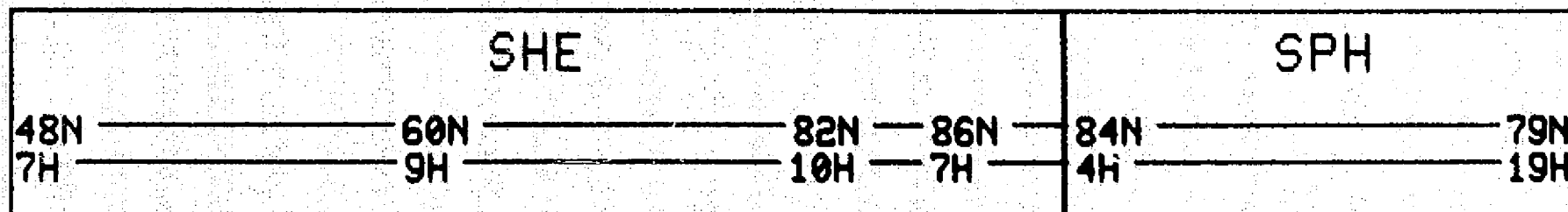
P

SOL
RAD
-11B



P

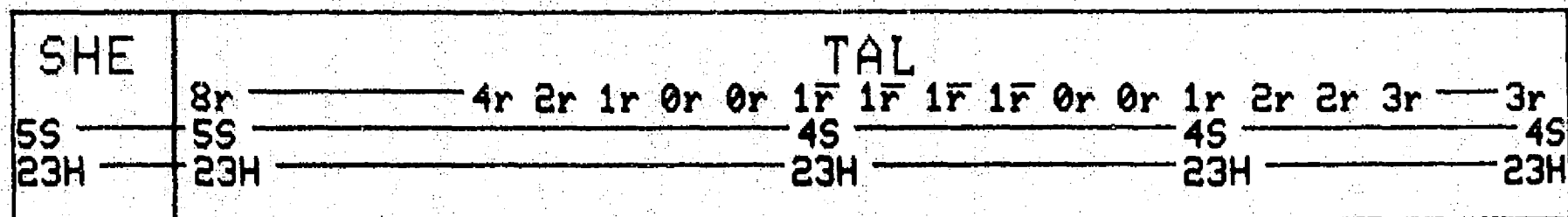
HAWK
EYE-1



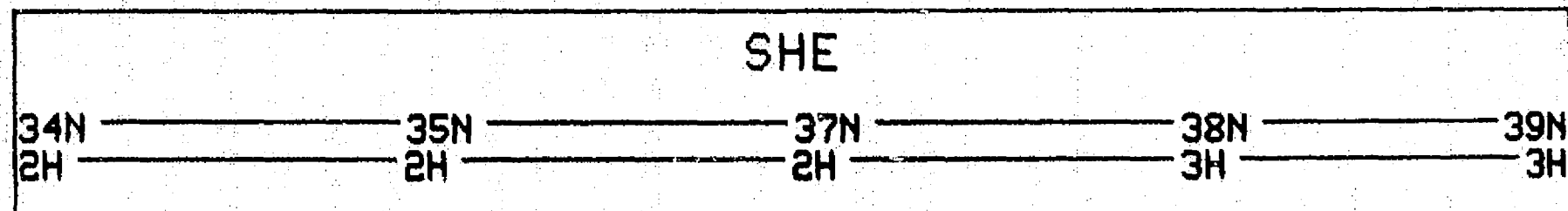
DAY 63 1977

P

MOON

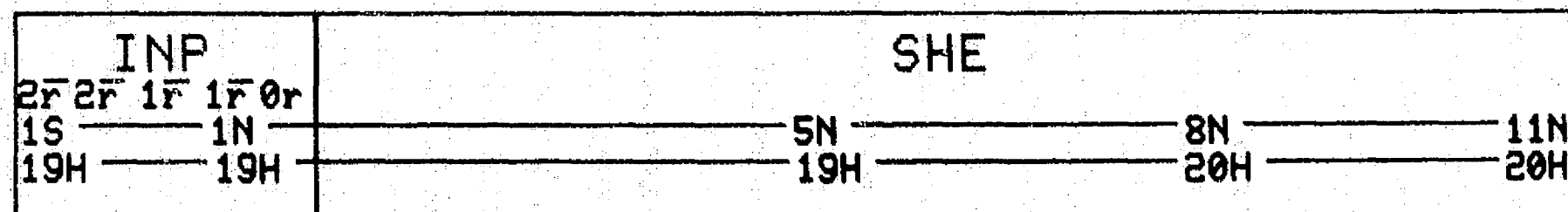


IMP-J

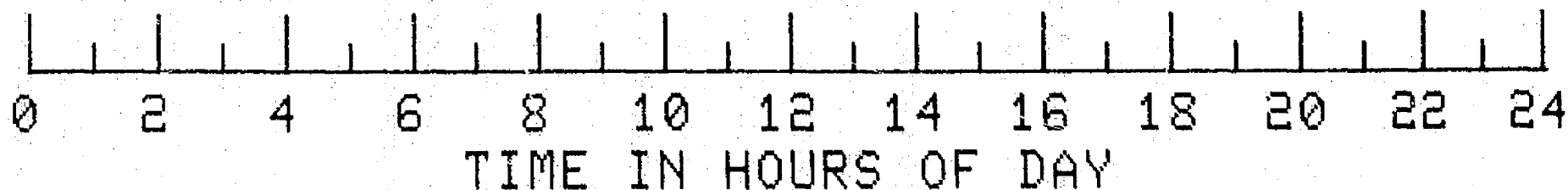
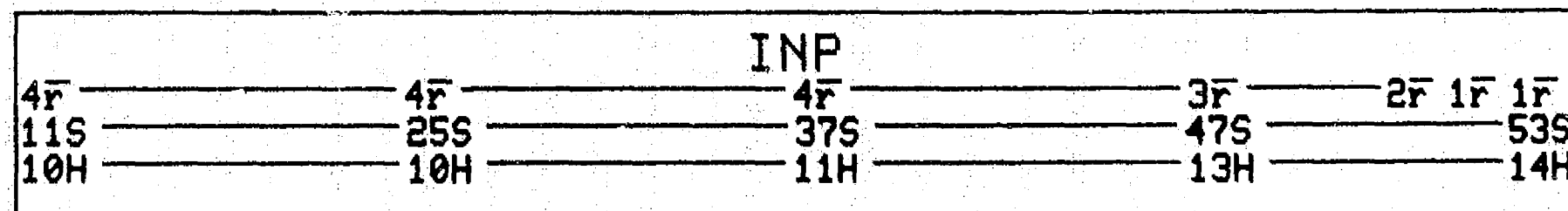


S

IMP-H

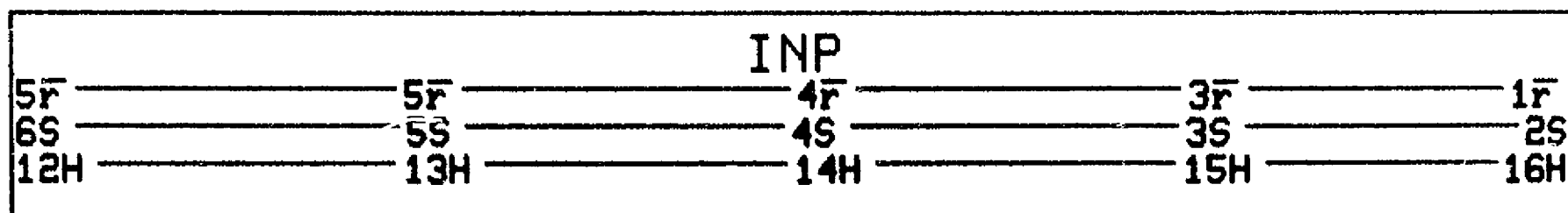


VELA
-5B

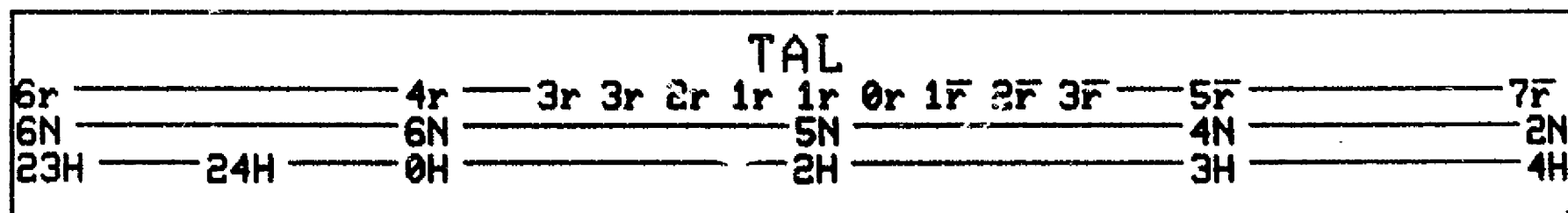


DAY 63 1977

SOL
RAD
-11A

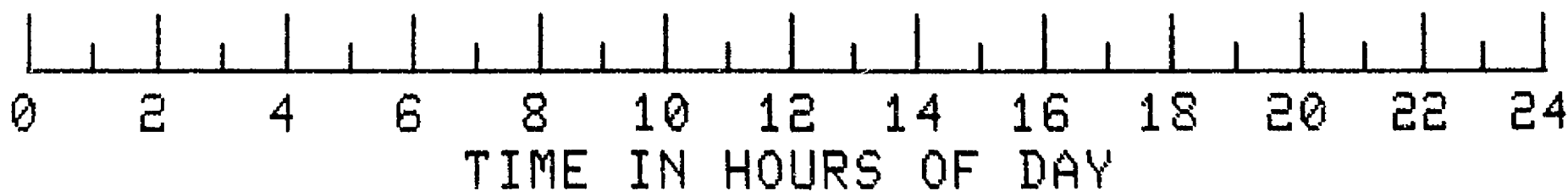
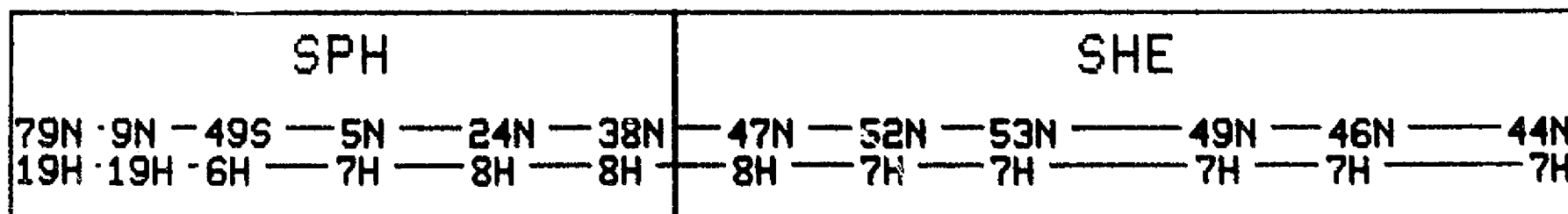


SOL
RAD
-11B



P

HAWK
EYE-1



$$E_{\text{eff}} = E_0 \left(1 - \frac{\alpha}{2} \right) \quad (1)$$

IMP-J

\$

P

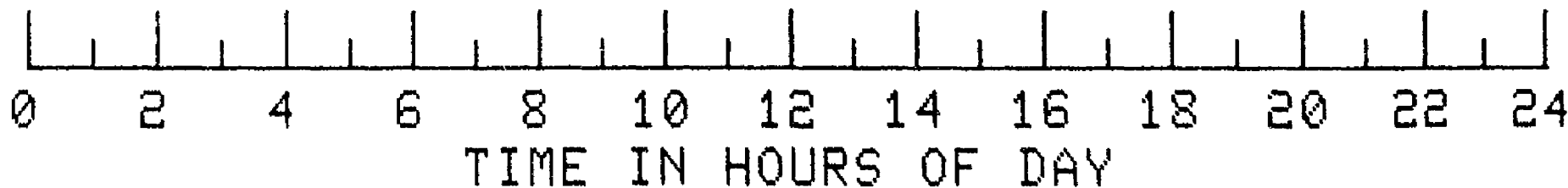
IMP-H

\$

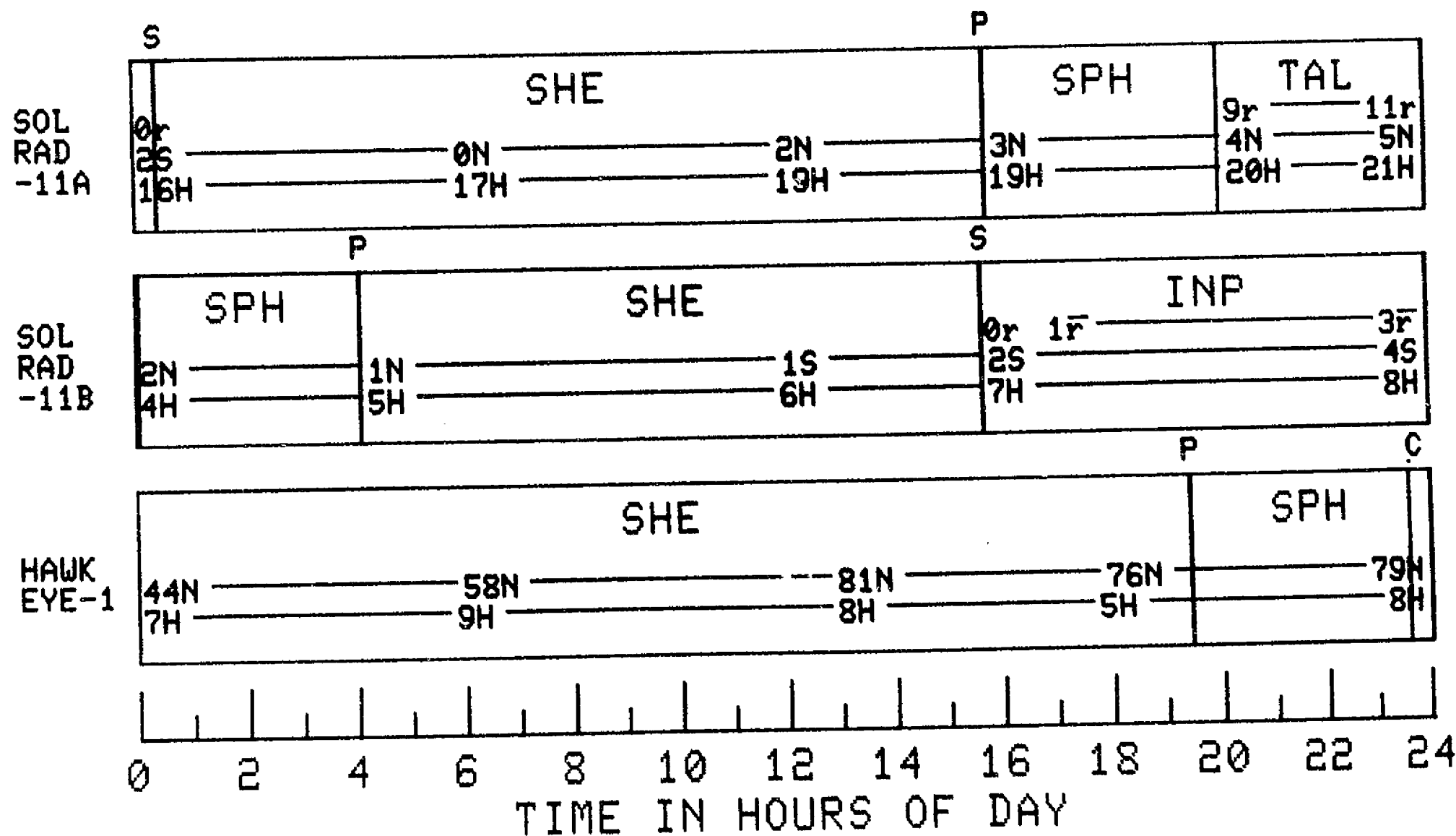
F

VELA
-5B

| INP | SHE | | | | SPH | |
|------|-----|-----|-----|-----|-----|--|
| 1F0r | | | | | | |
| 53S | 53S | 52S | 44S | 31S | 16S | |
| 14H | 15H | 16H | 18H | 19H | 20H | |

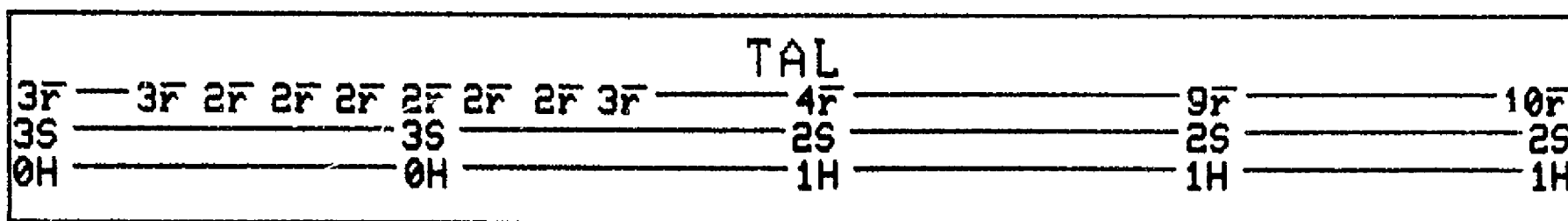


DAY 64 1977

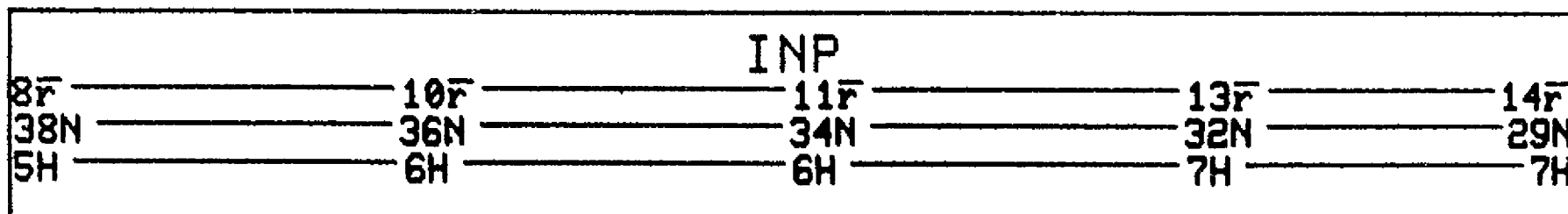


DAY 65 1977

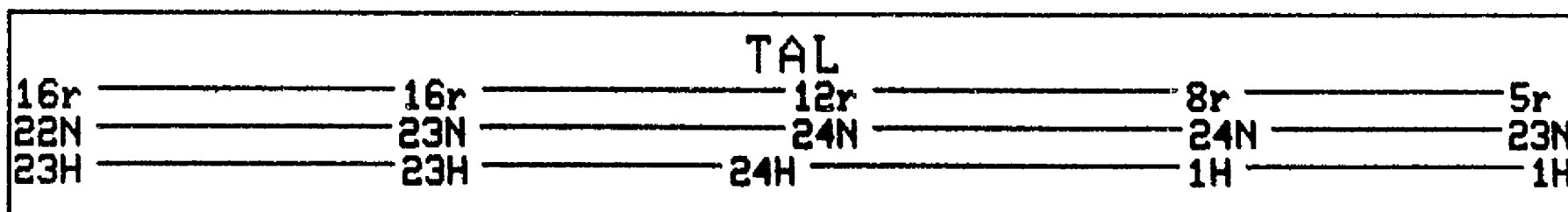
MOON



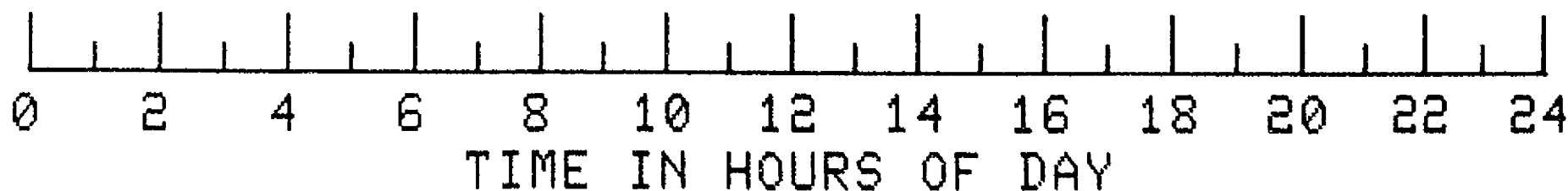
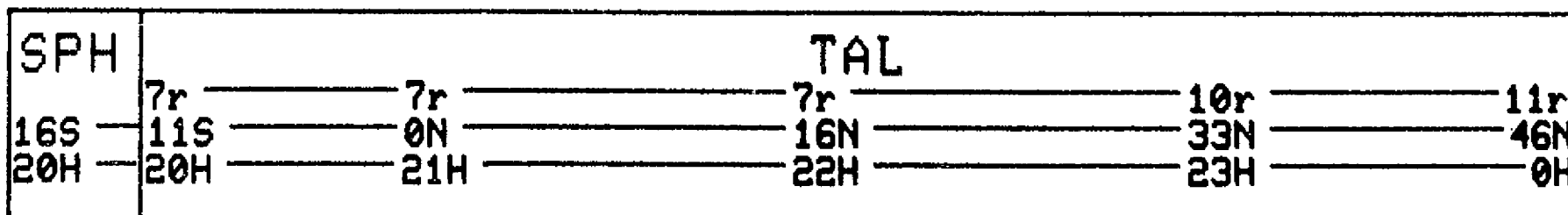
IMP-J



IMP-H

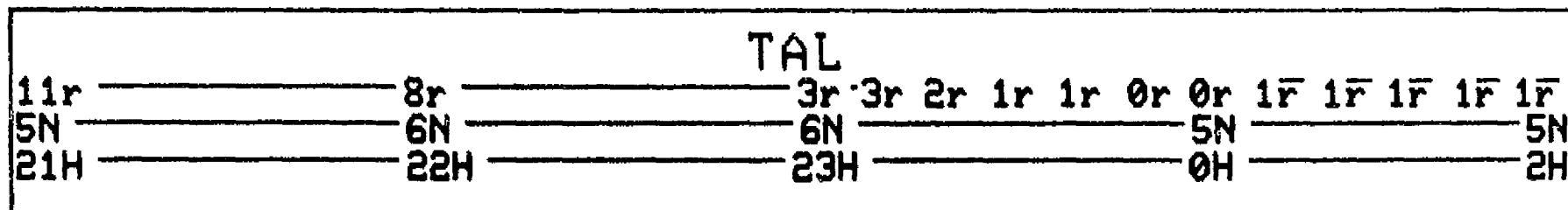


VELA
-5B

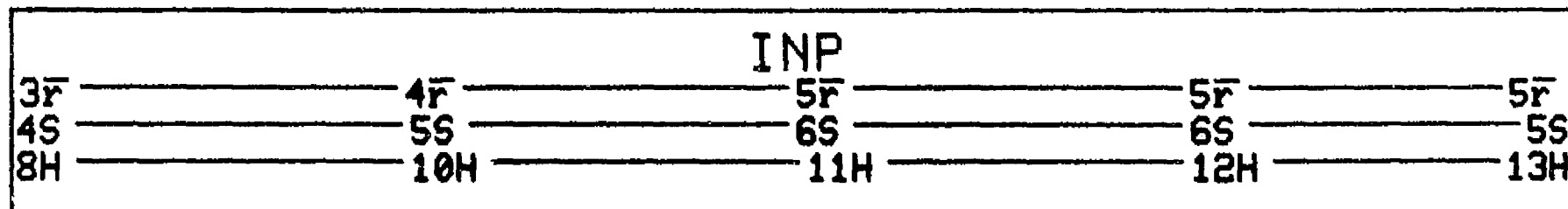


DAY 65 1977

SOL
RAD
-11A



SOL
RAD
-11B

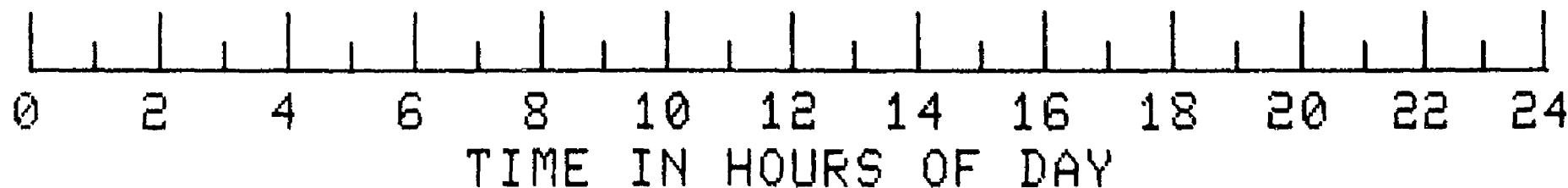
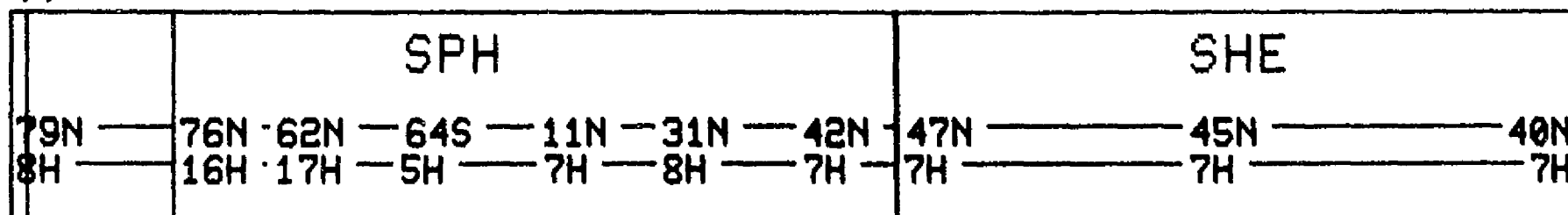


C

C

P

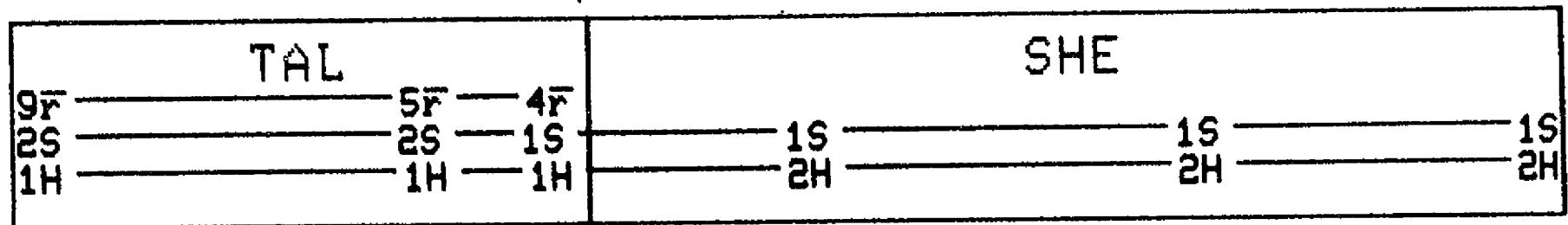
HAWK
EYE-1



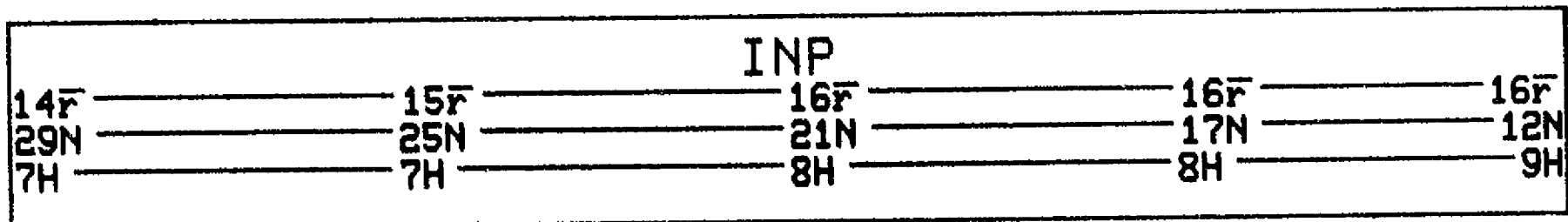
DAY 66 1977

P

MOON

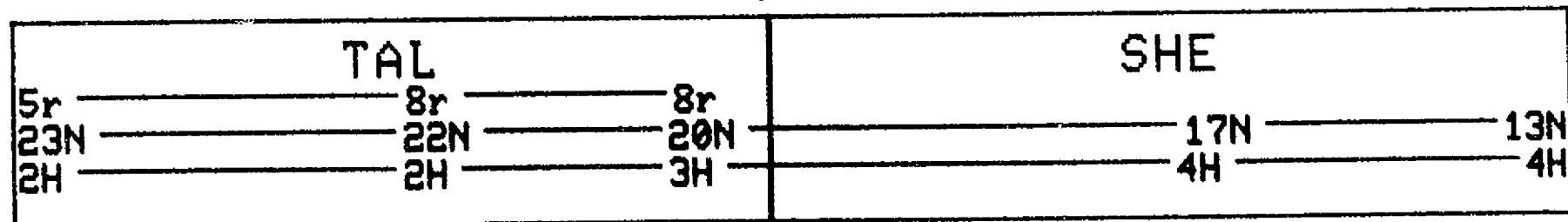


IMP-J



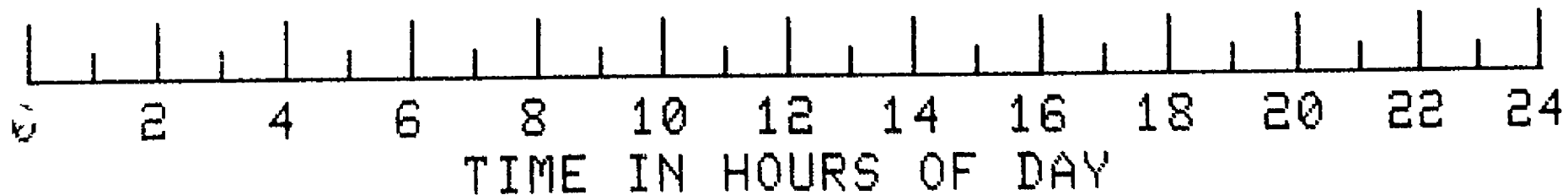
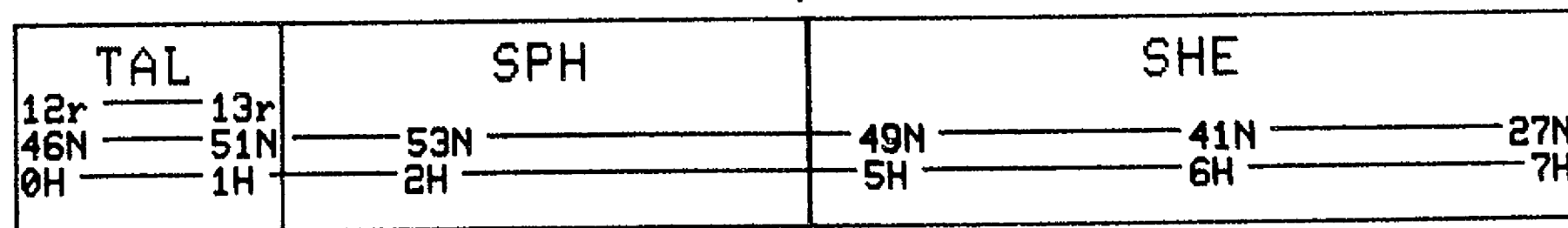
P

IMP-H

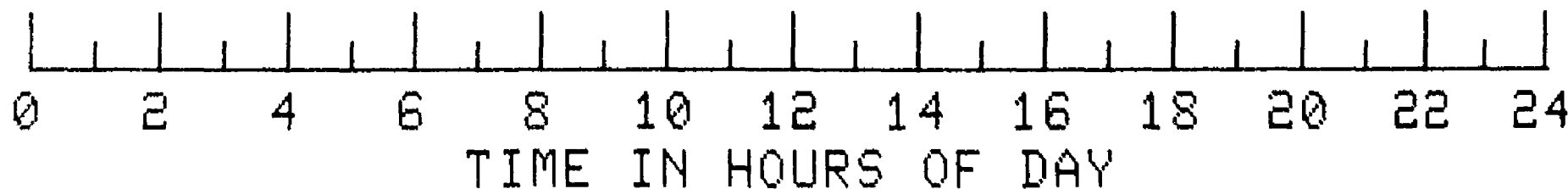
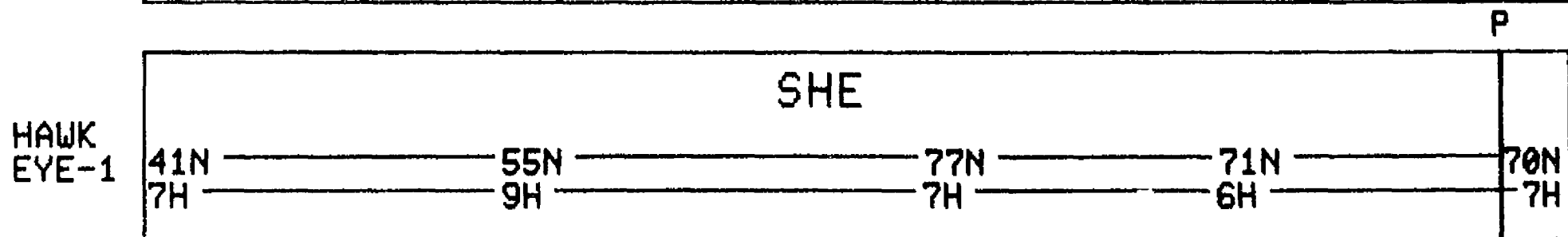
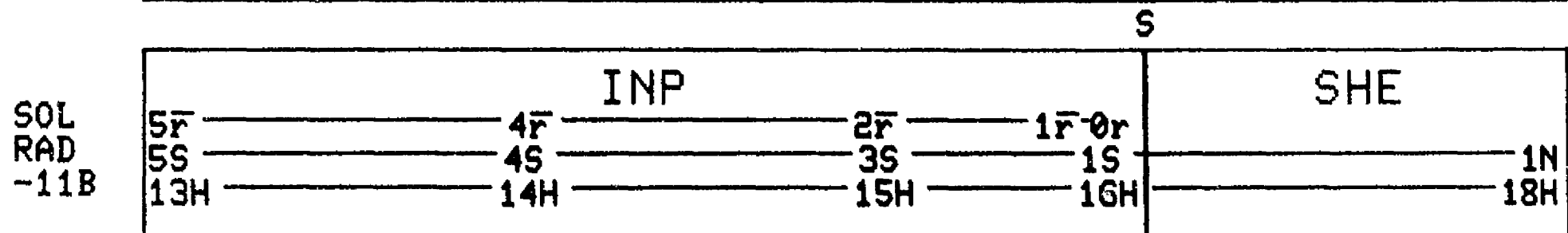
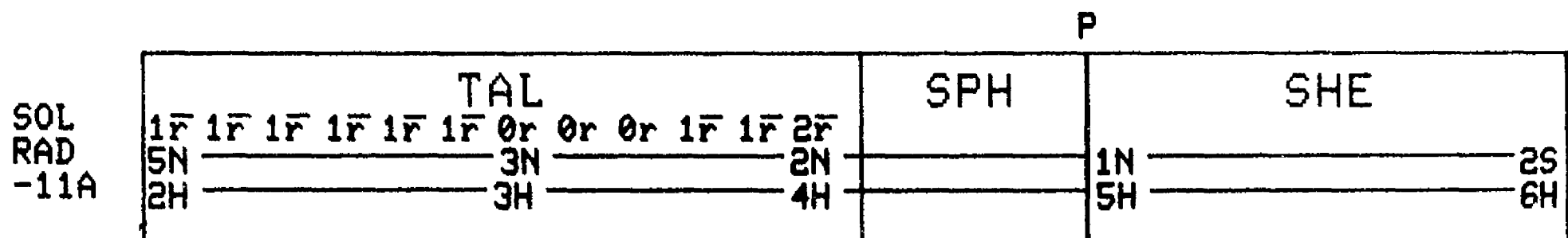


P

VELA
-5B

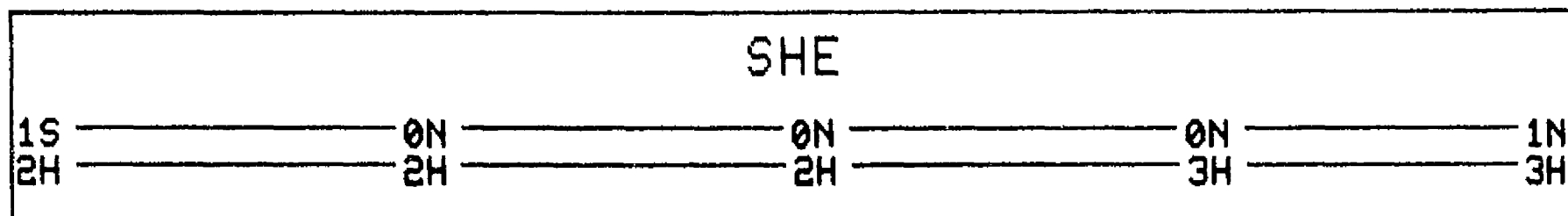


DAY 66 1977

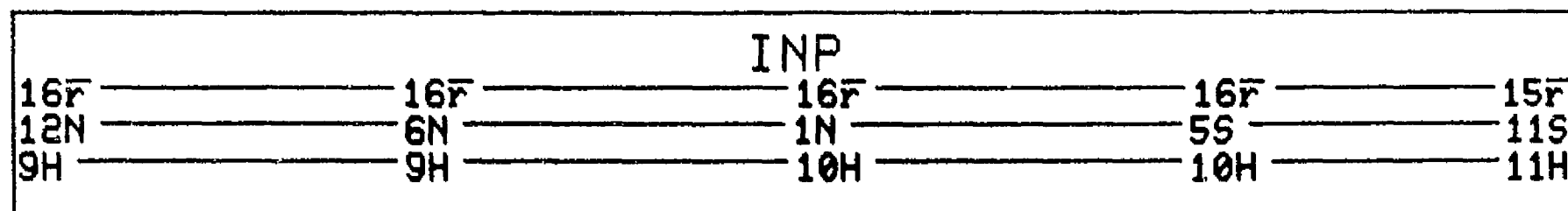


DAY 67 1977

MOON

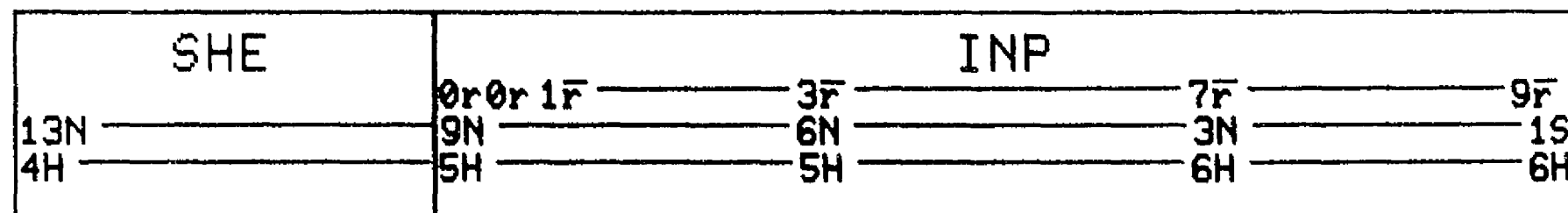


IMP-J



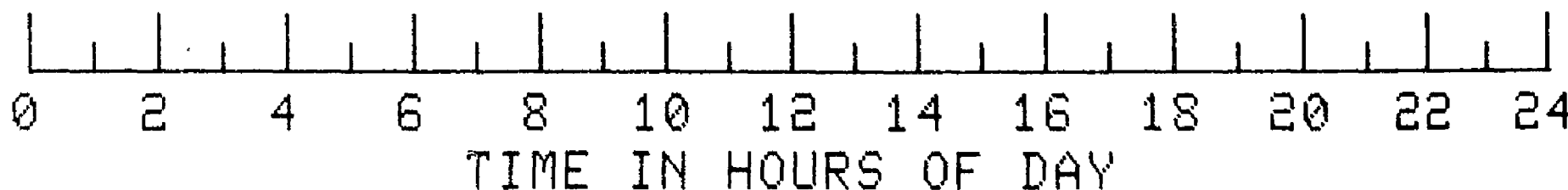
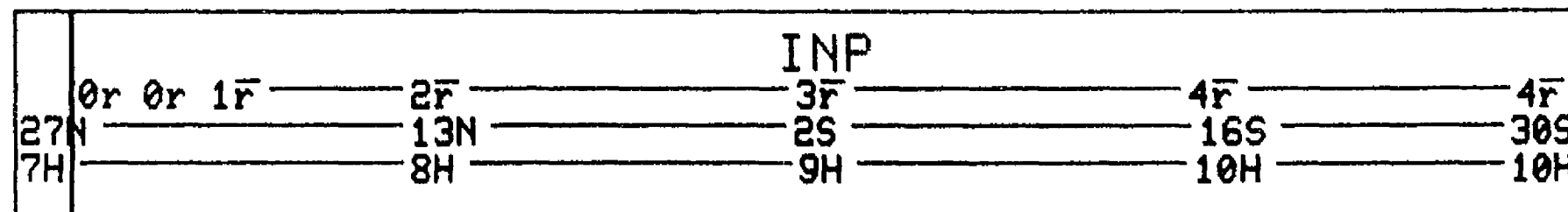
S

IMP-H

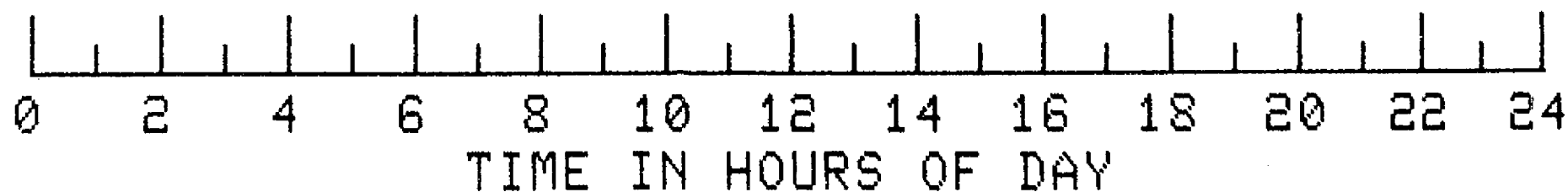
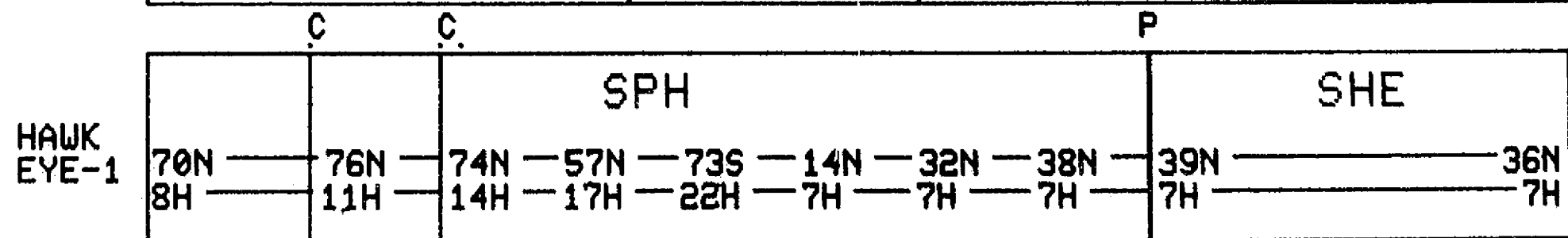
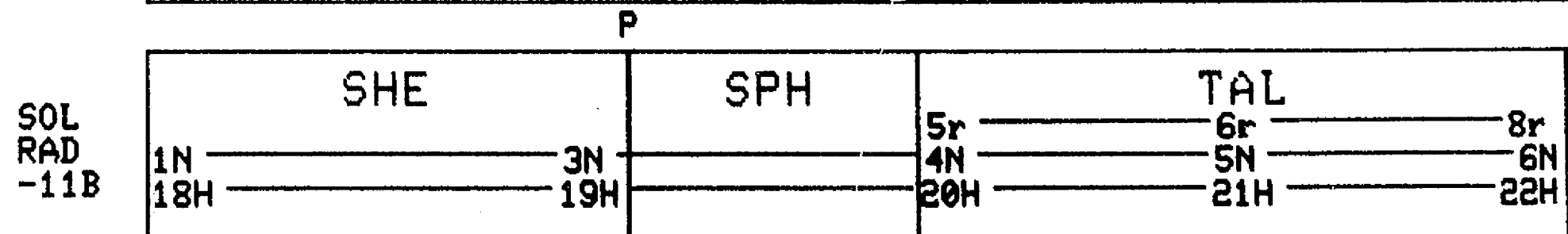
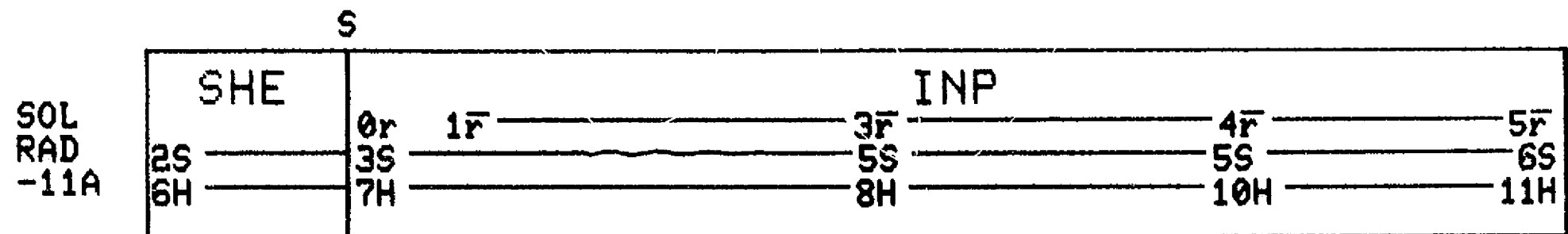


S

VELA
-5B



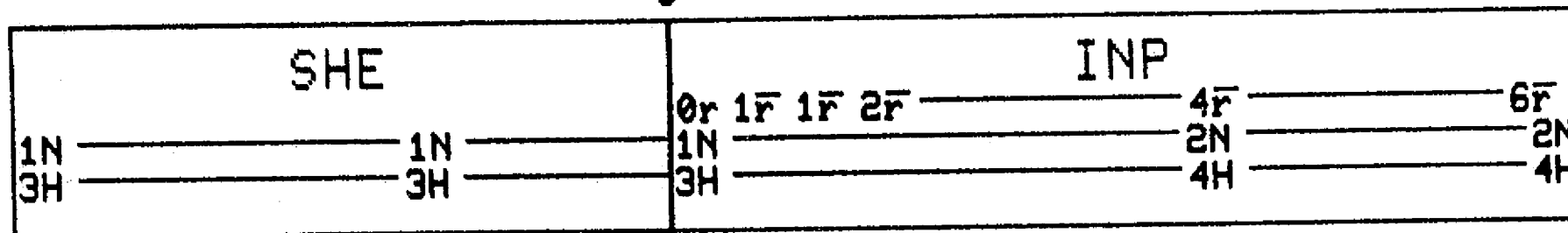
DAY 67 1977



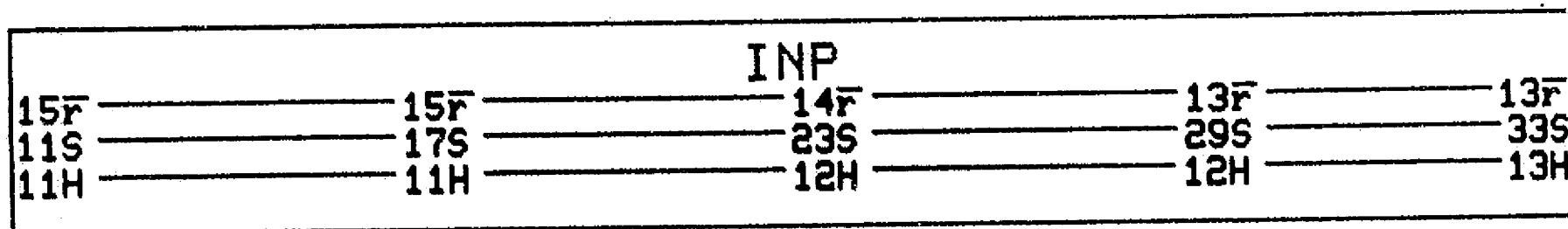
DAY 68 1977

S

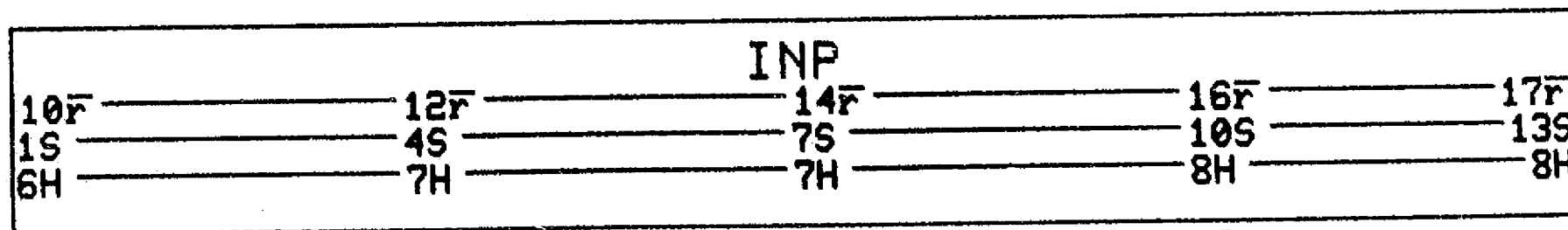
MOON



IMP-J

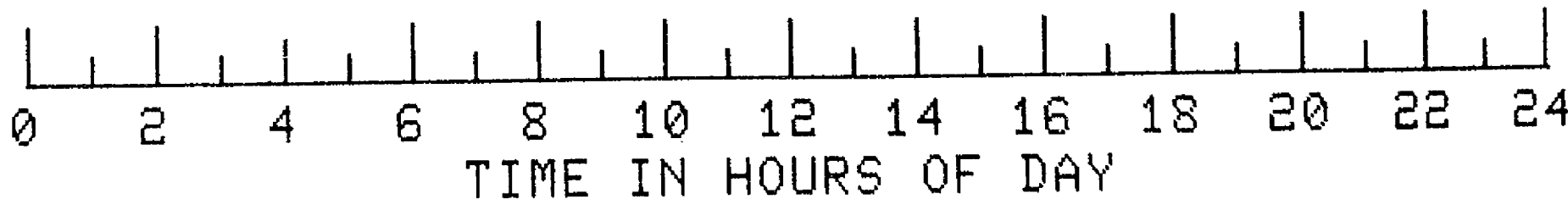
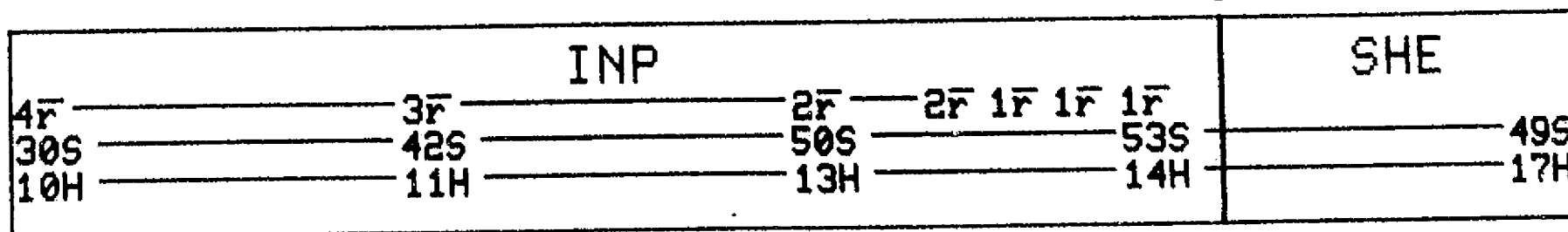


IMP-H



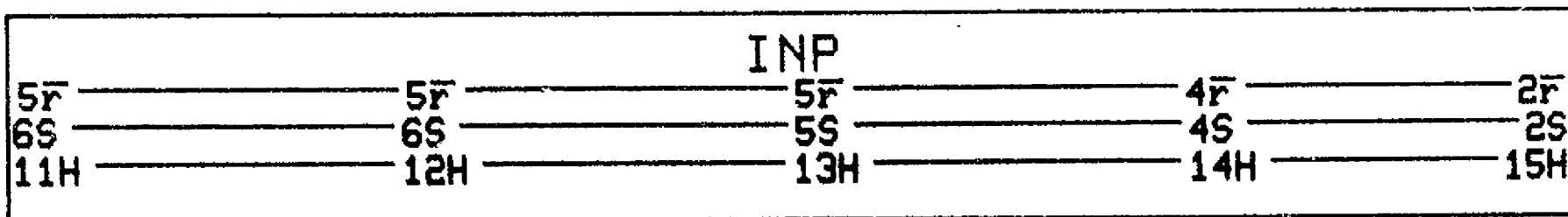
S

VELA
-5B

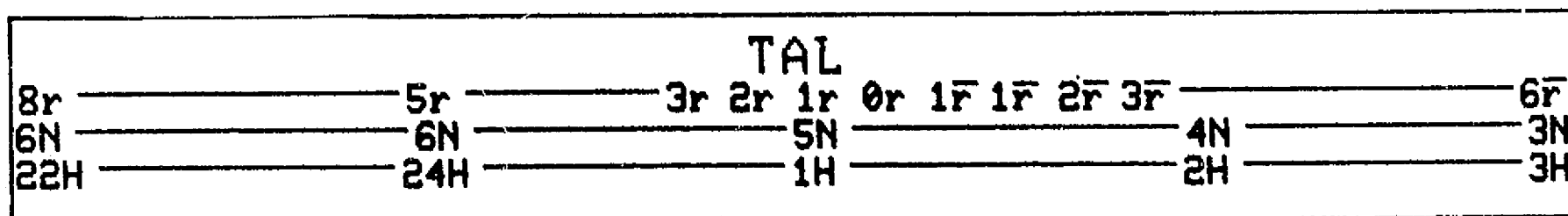


DAY 68 1977

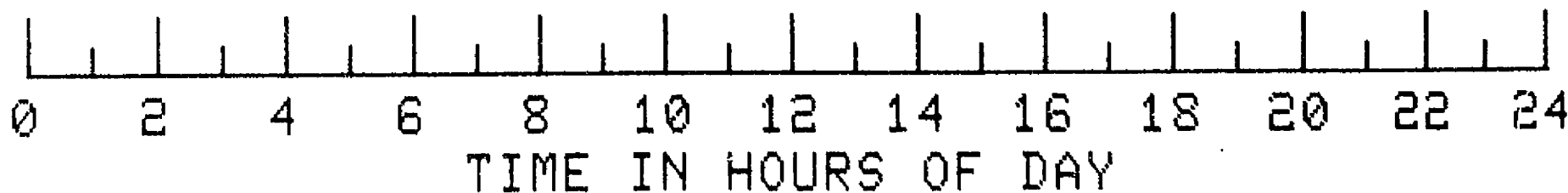
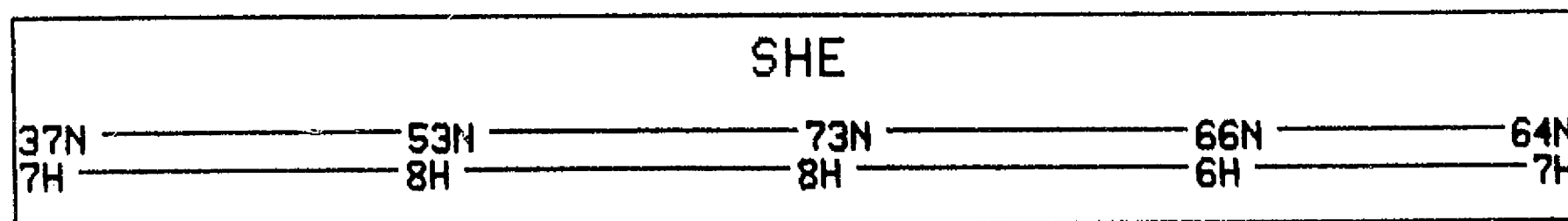
SOL
RAD
-11A



SOL
RAD
-11B

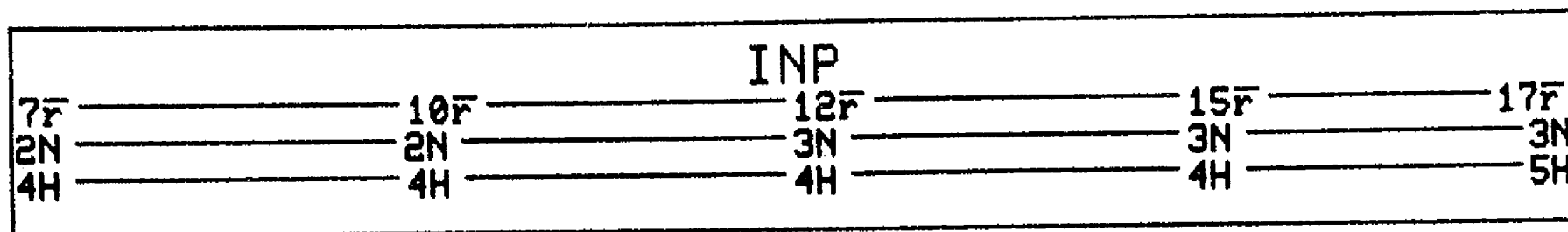


HAWK
EYE-1

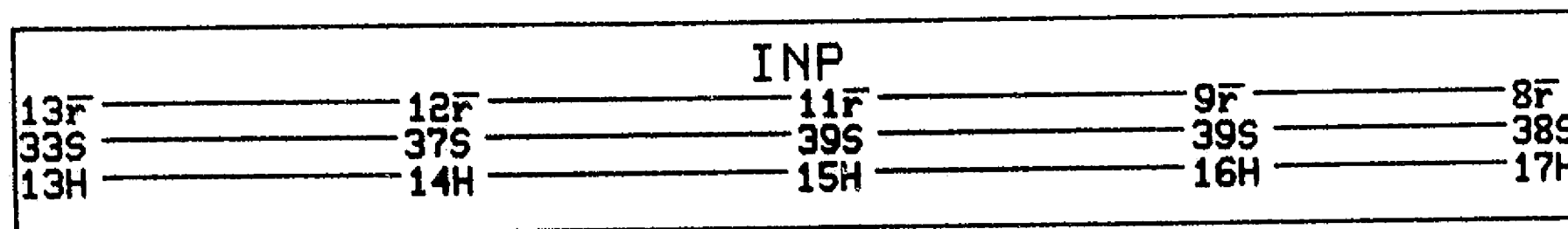


DAY 69 1977

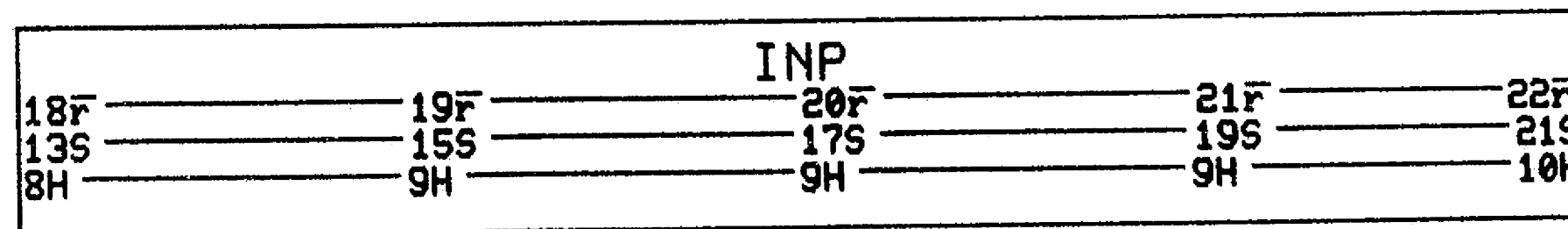
MOON



IMP-J

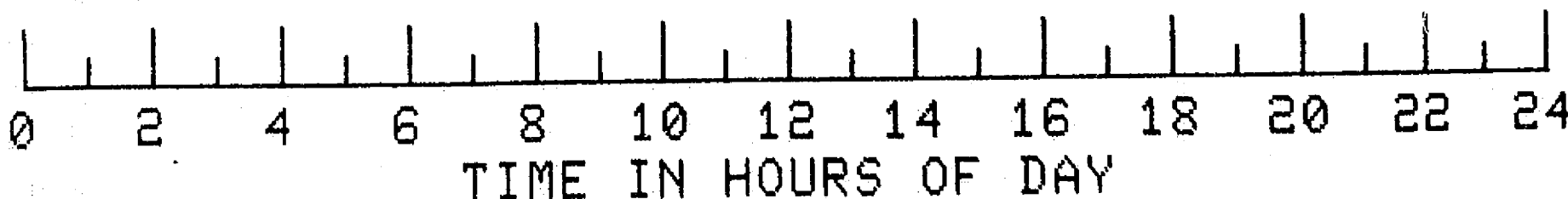
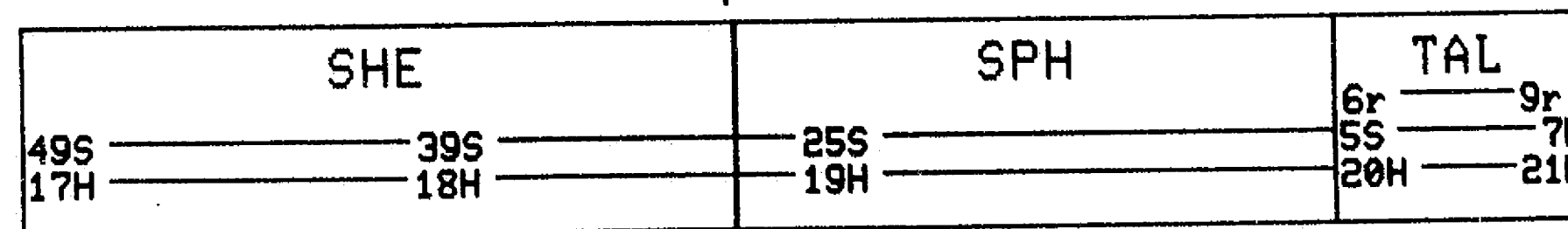


IMP-H

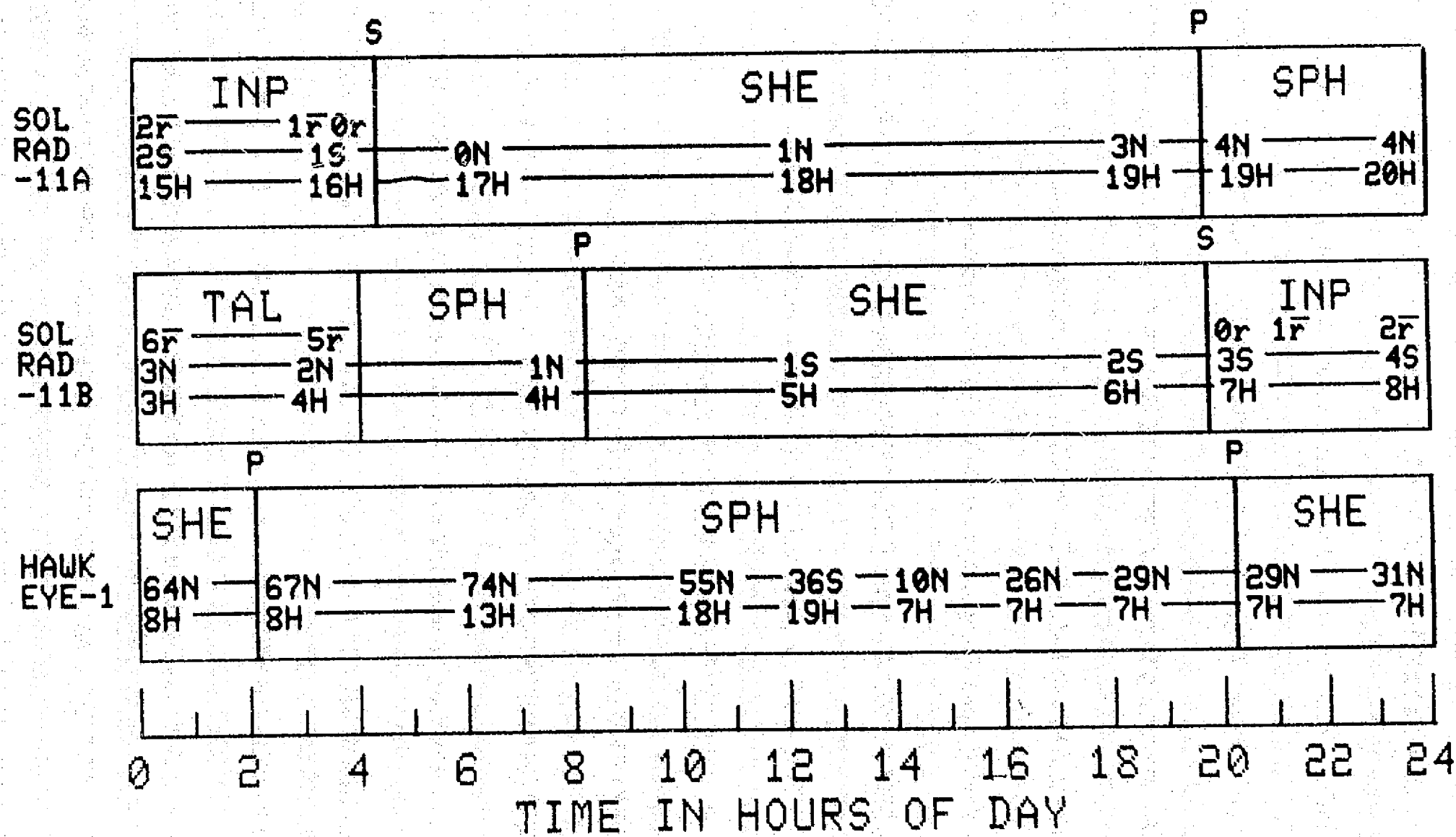


P

VELA
-5B

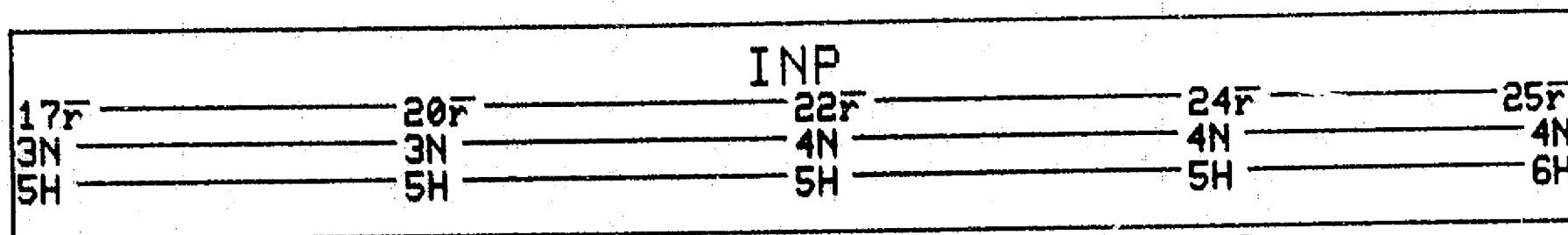


DAY 69 1977

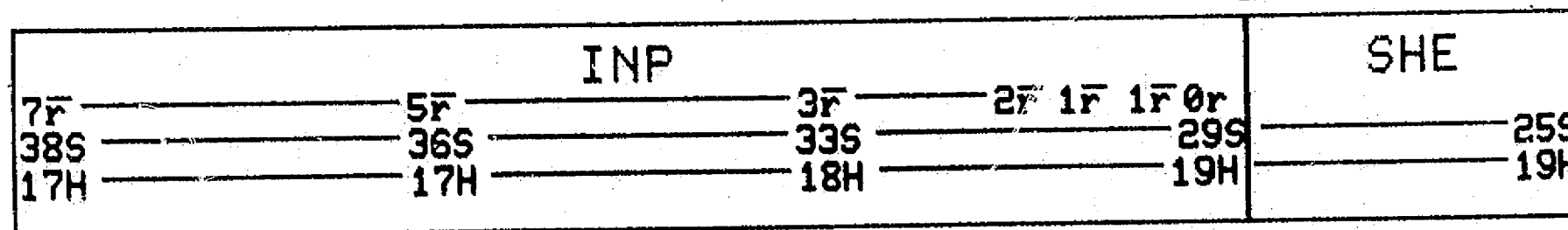


DAY 70 1977

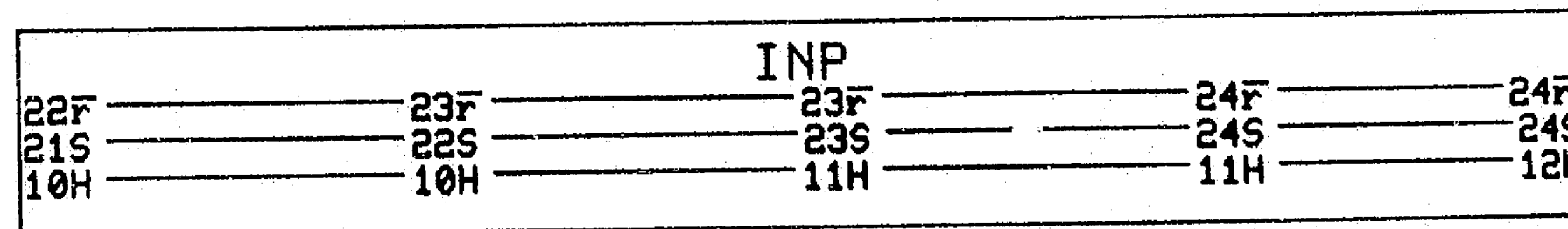
MOON



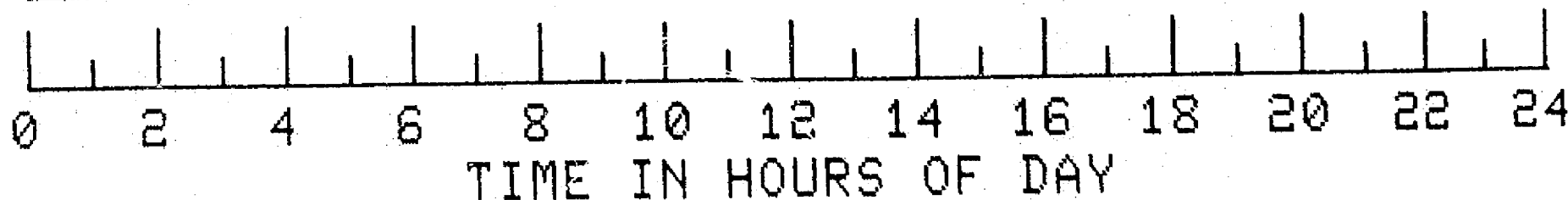
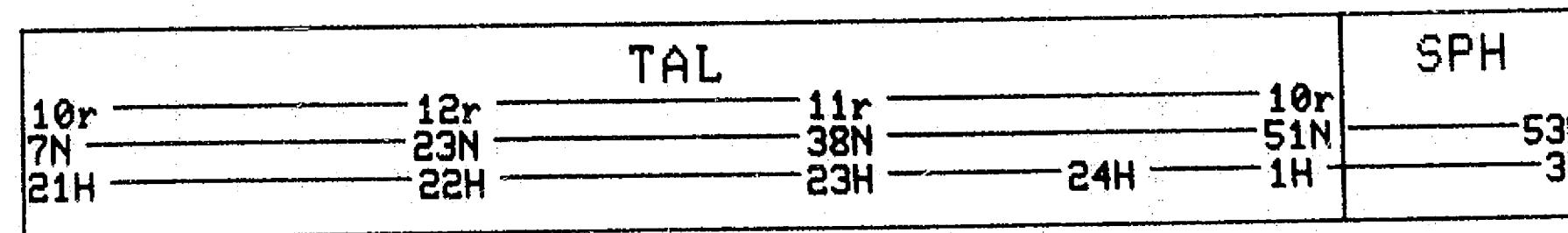
IMP-J



IMP-H

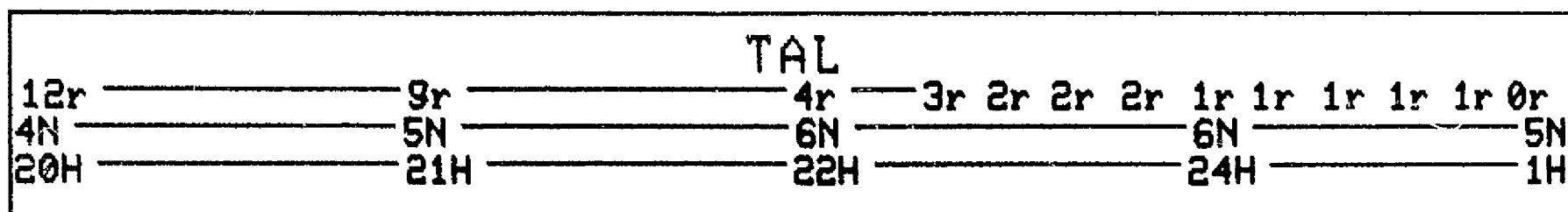


VELA
-5B

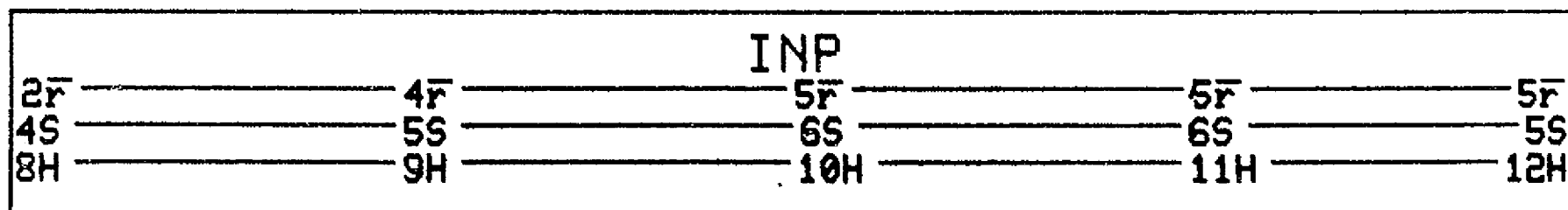


DAY 70 1977

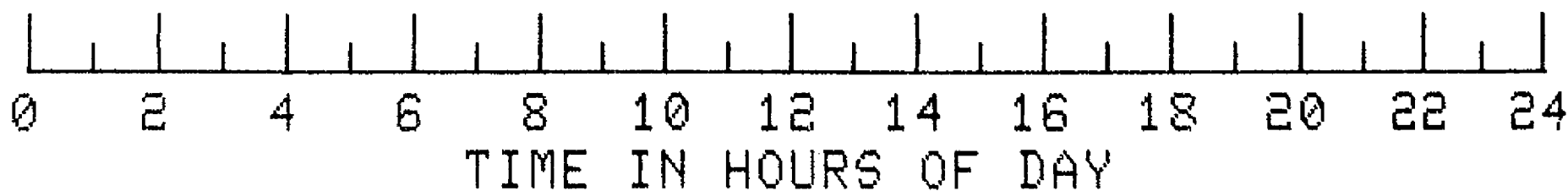
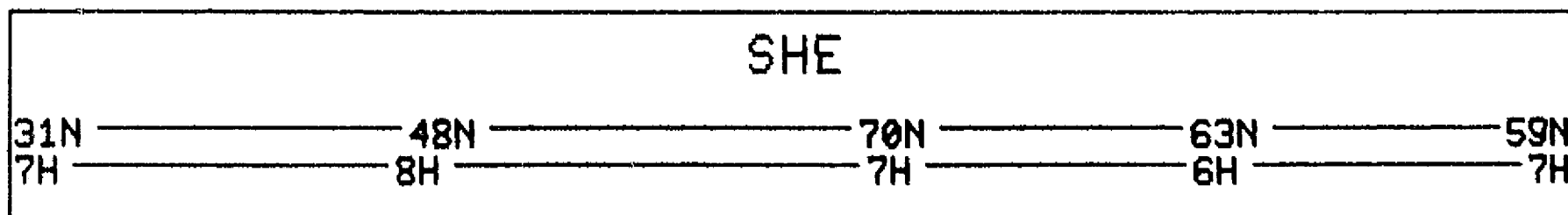
SOL
RAD
-11A



SOL
RAD
-11B

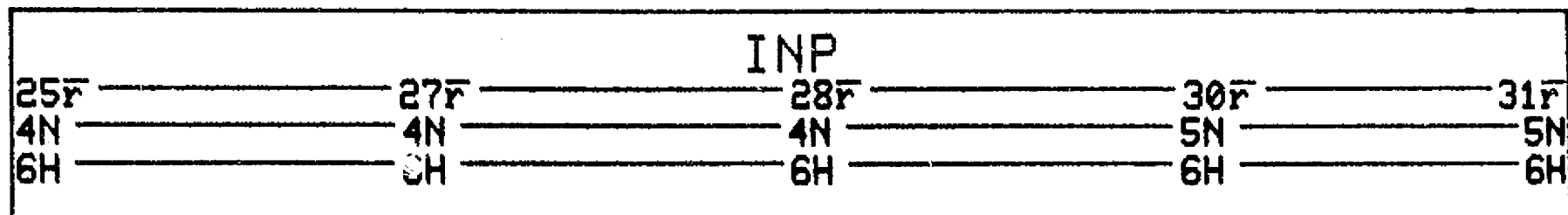


HAWK
EYE-1

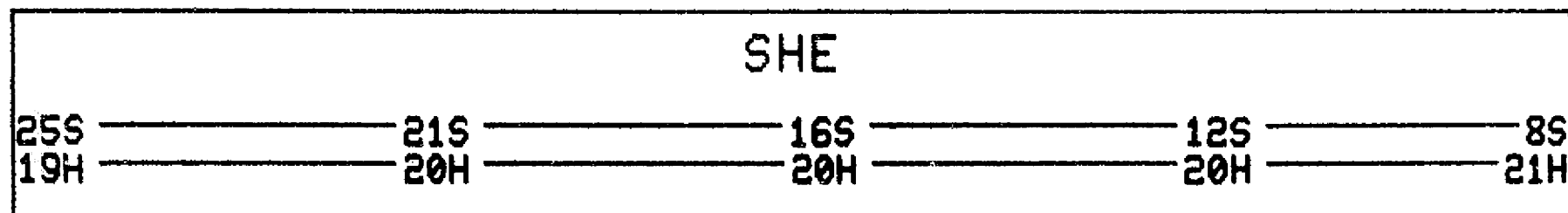


DAY 71 1977

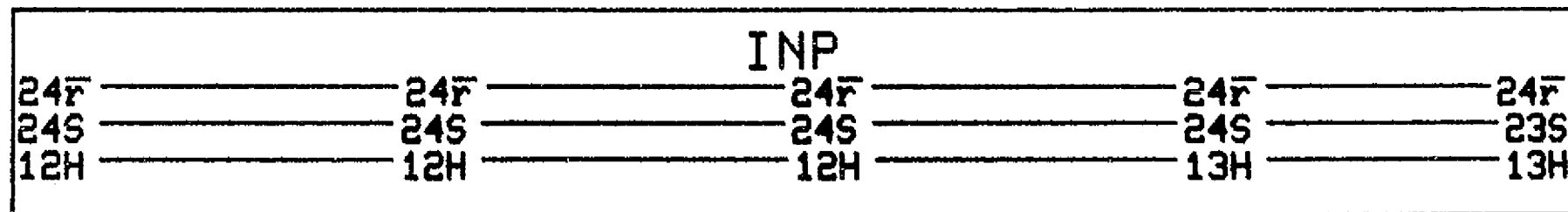
MOON



IMP-J



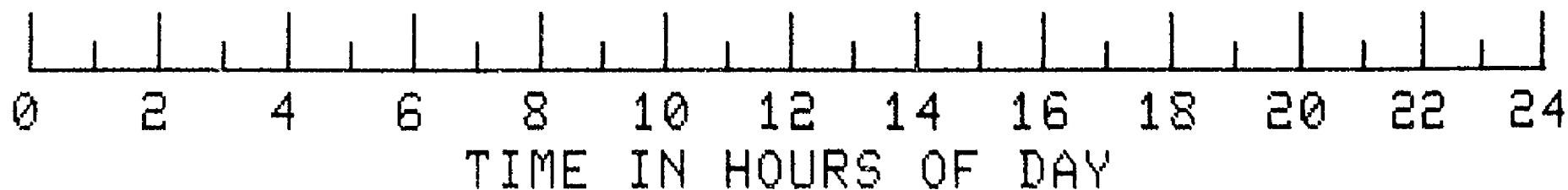
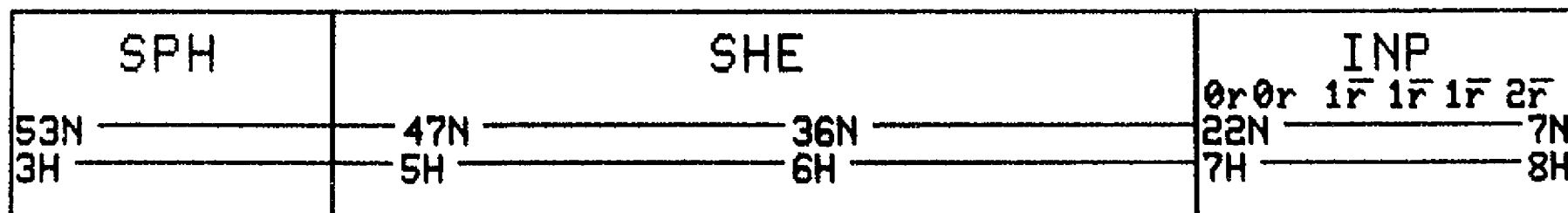
IMP-H



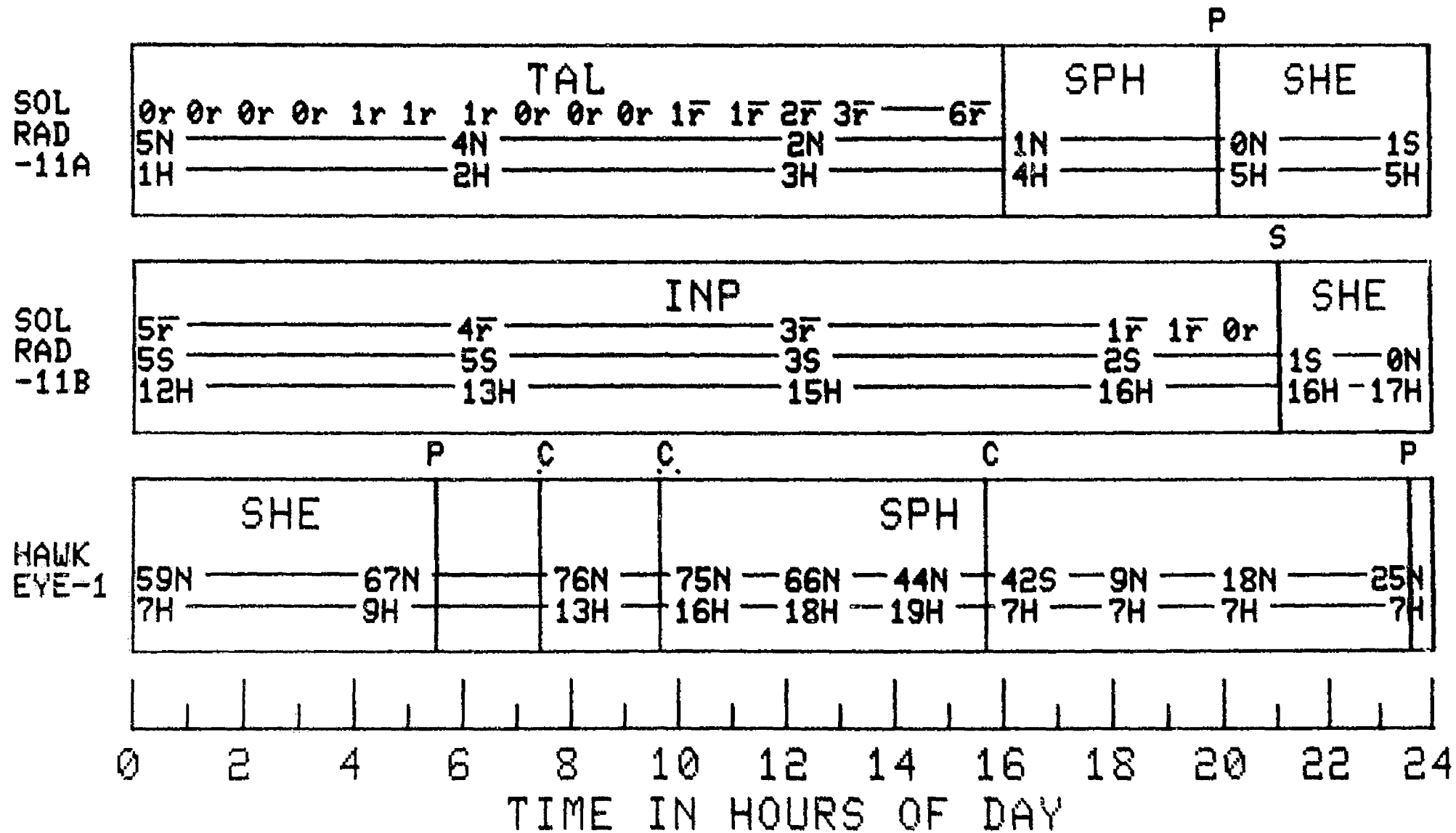
P

S

VELA
-5B

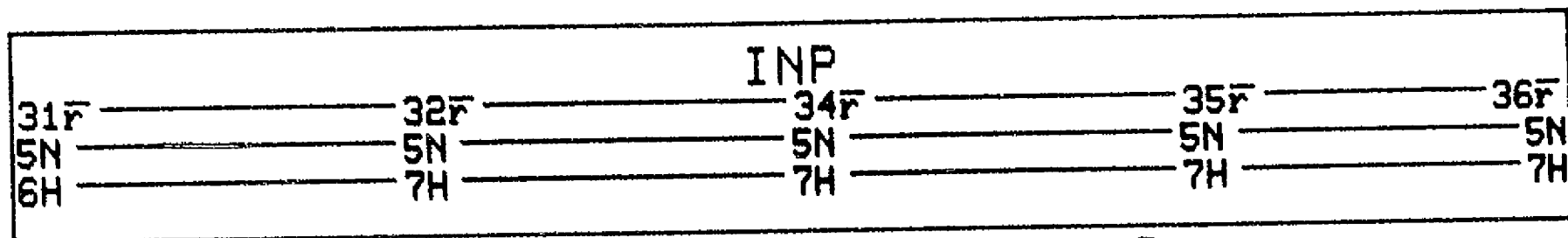


DAY 71 1977



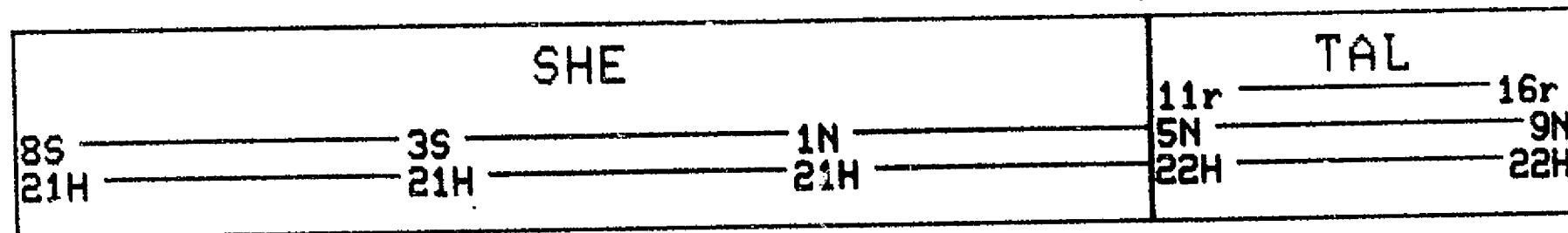
DAY 72 1977

MOON

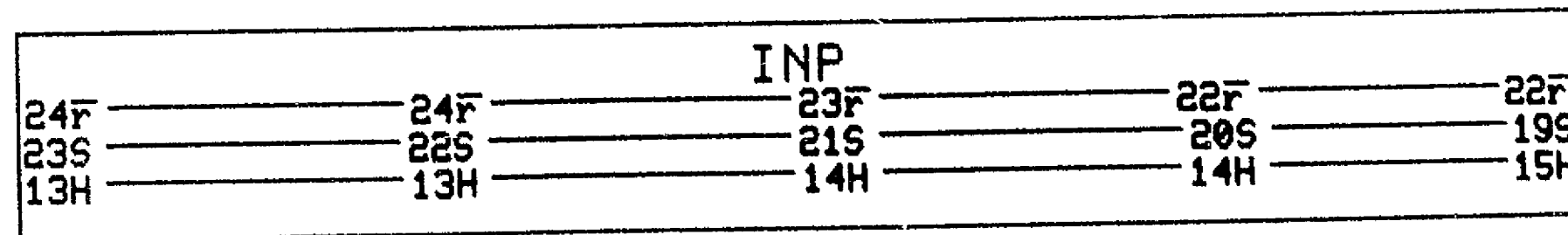


P

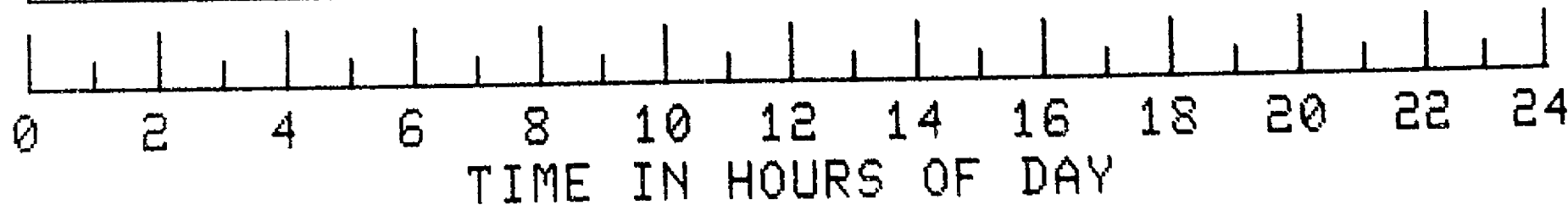
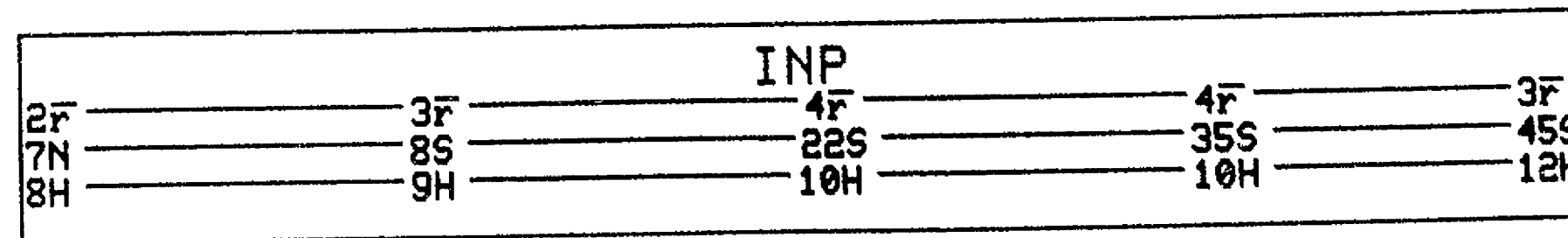
IMP-J



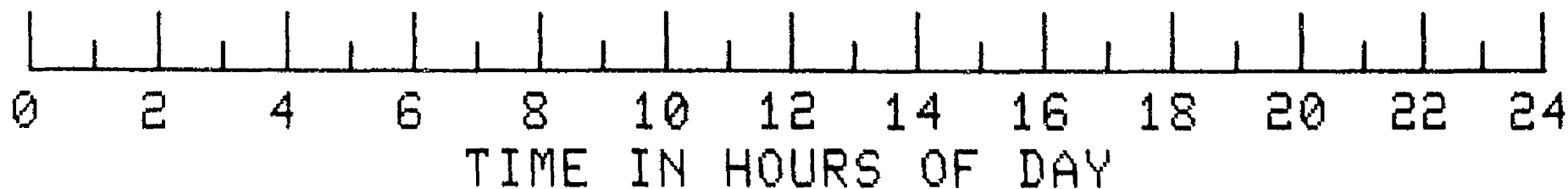
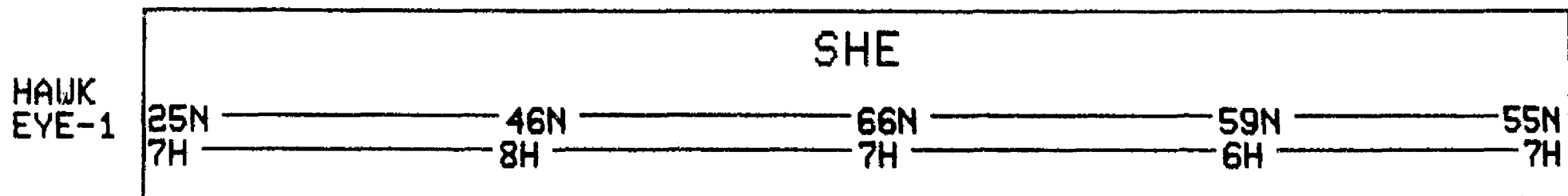
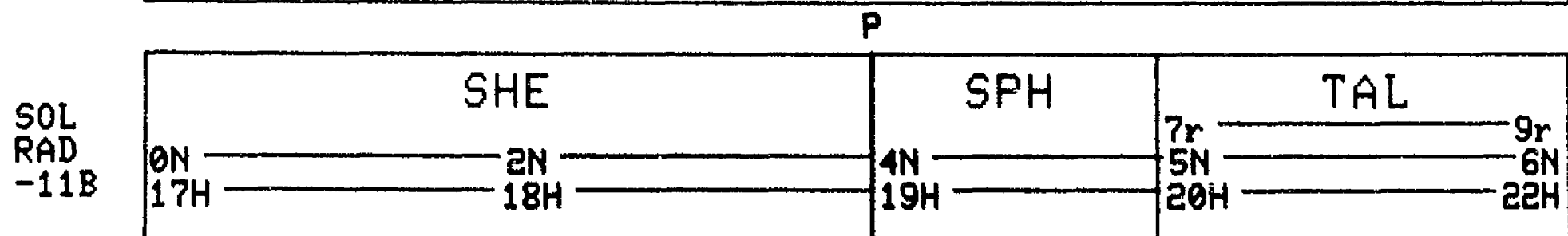
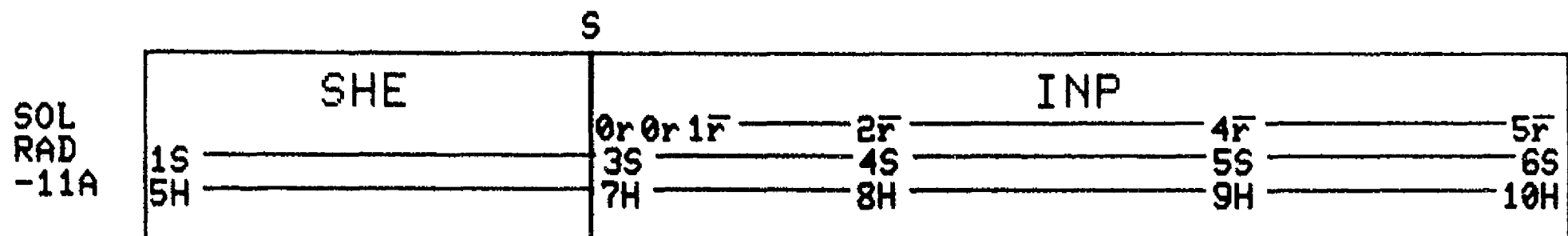
IMP-H



VELA
-5B

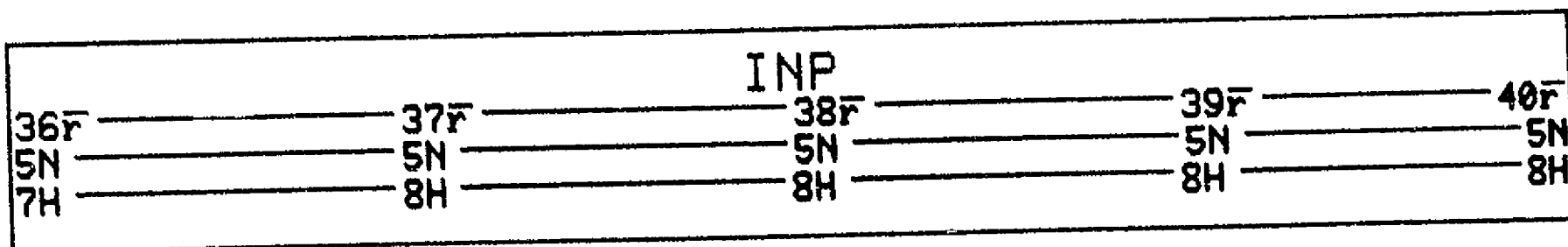


DAY 72 1977

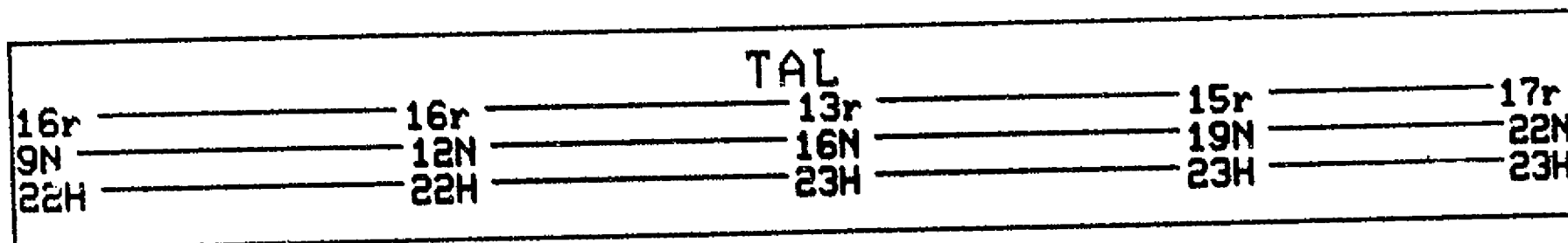


DAY 73 1977

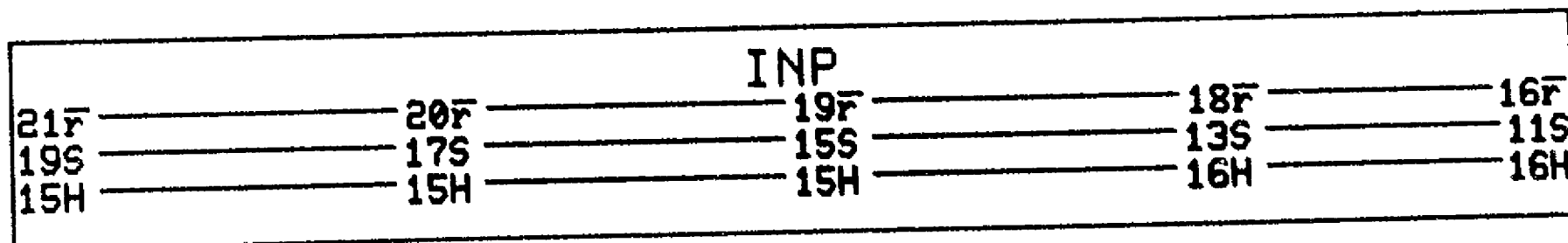
MOON



IMP-J

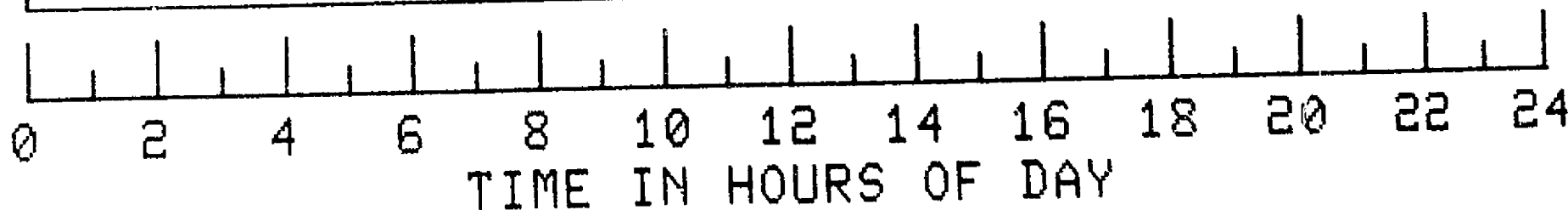
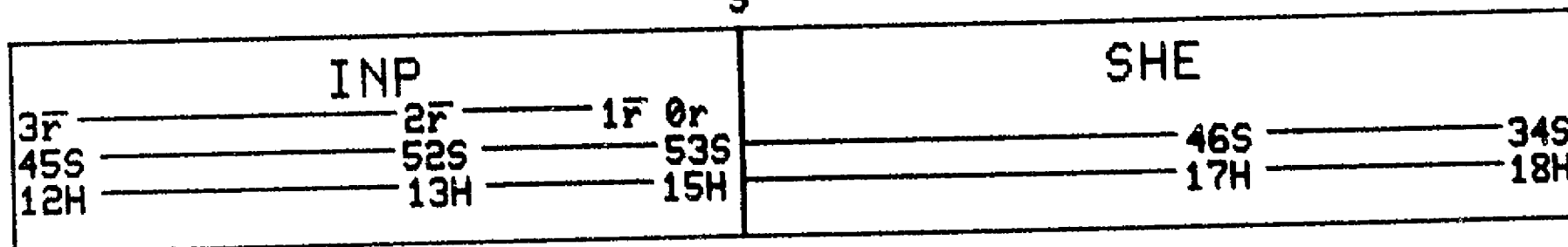


IMP-H



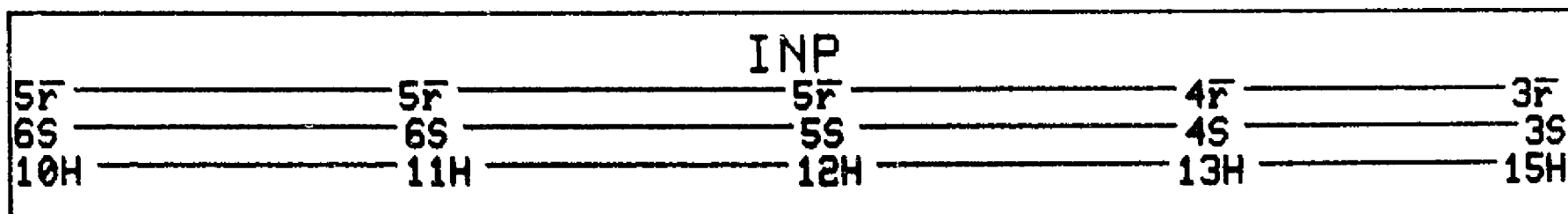
S

VELA
-5B

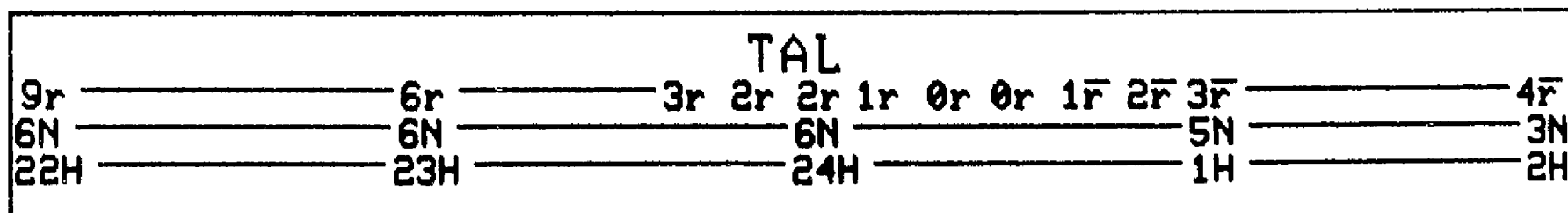


DAY 73 1977

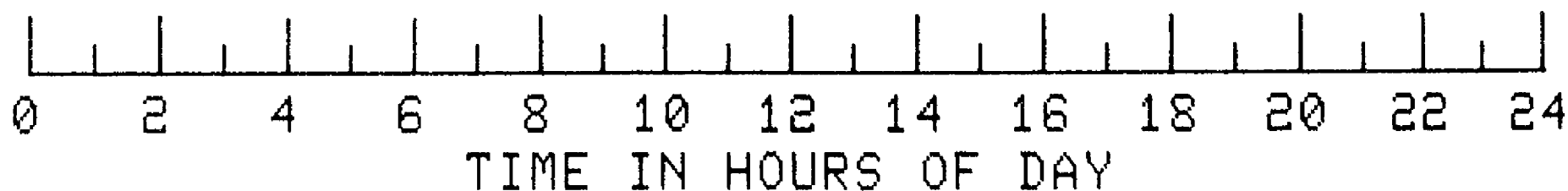
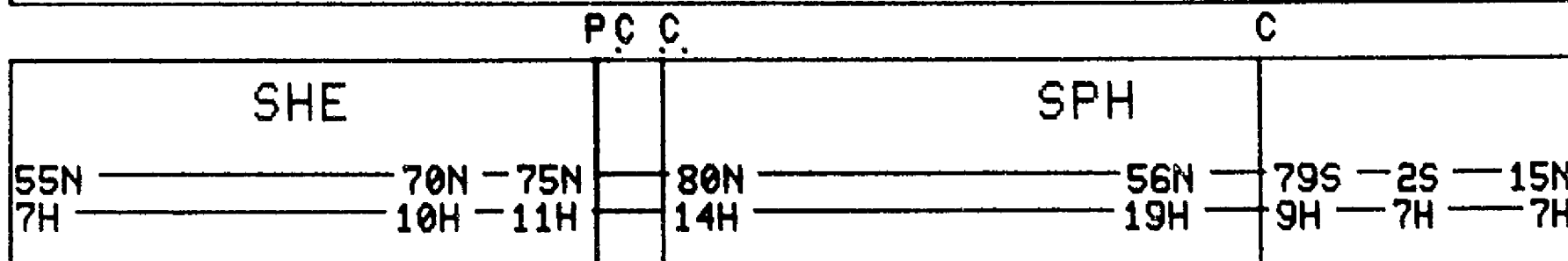
SOL
RAD
-11A



SOL
RAD
-11B

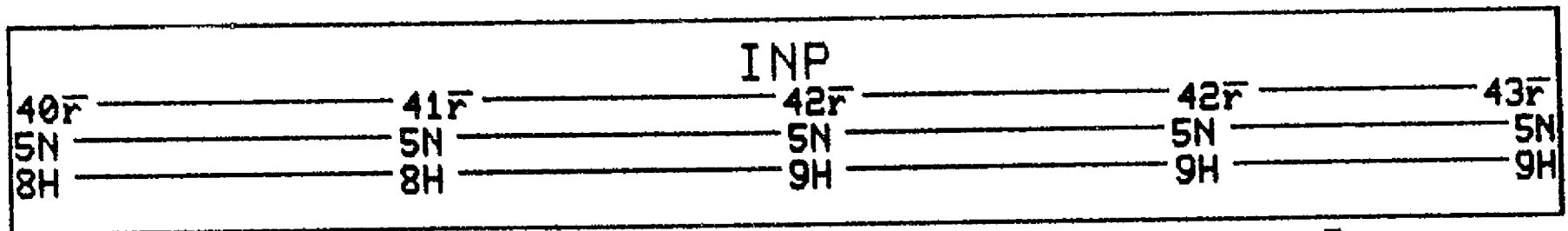


HAWK
EYE-1

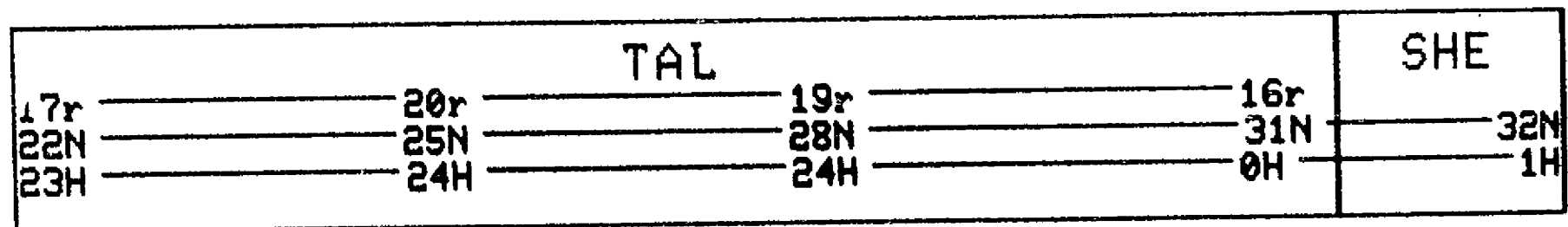


DAY 74 1977

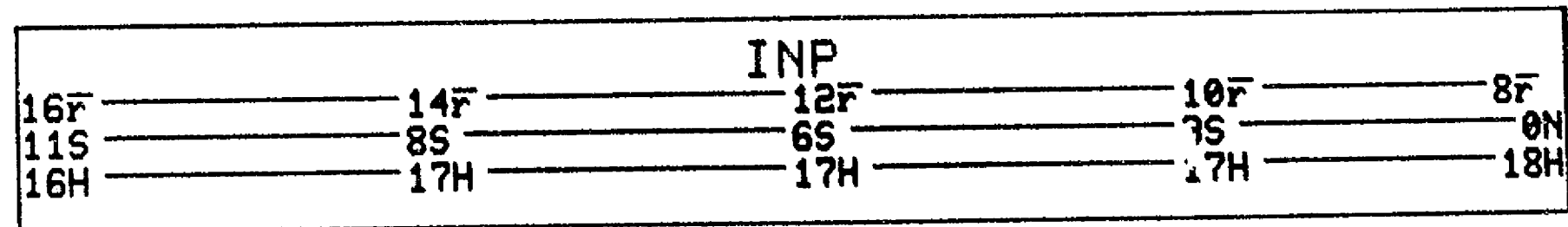
MOON



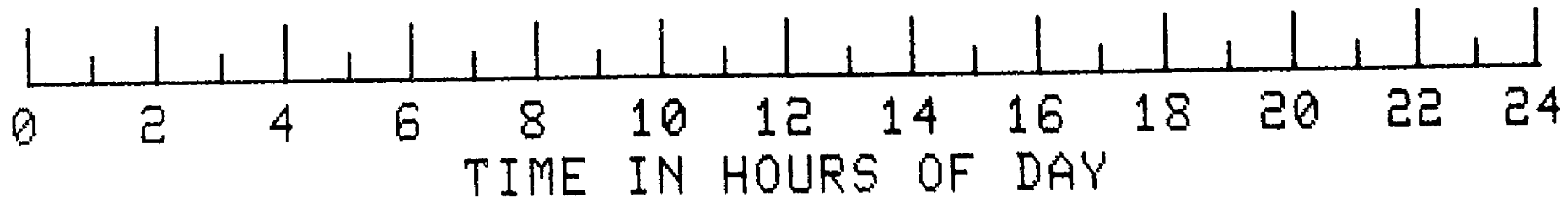
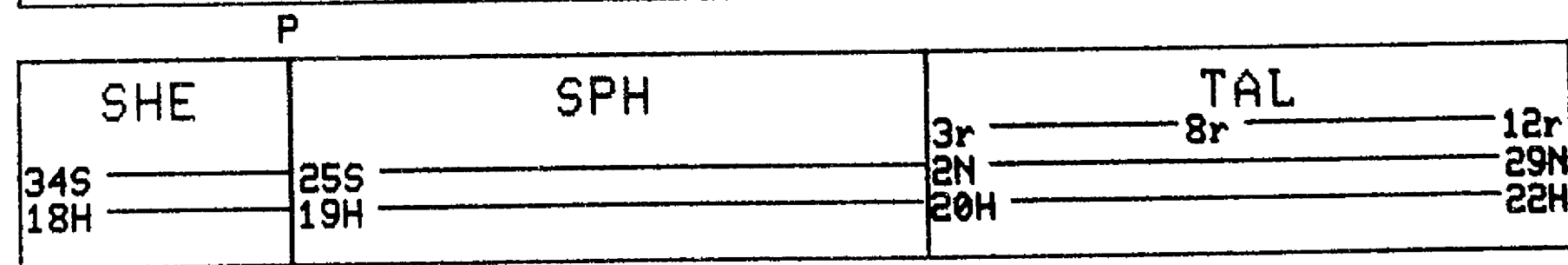
IMP-J



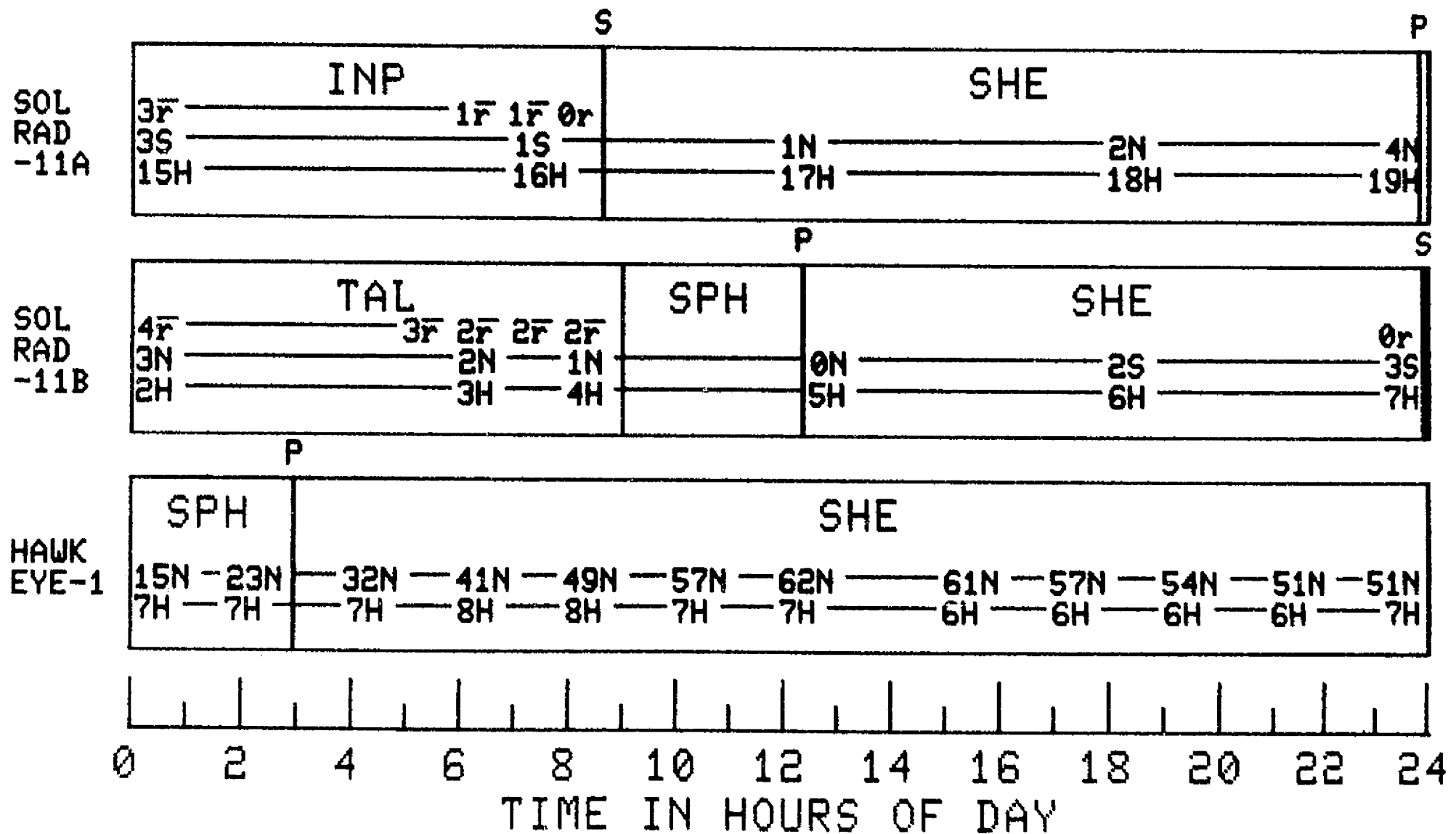
IMP-H



VELA
-5B

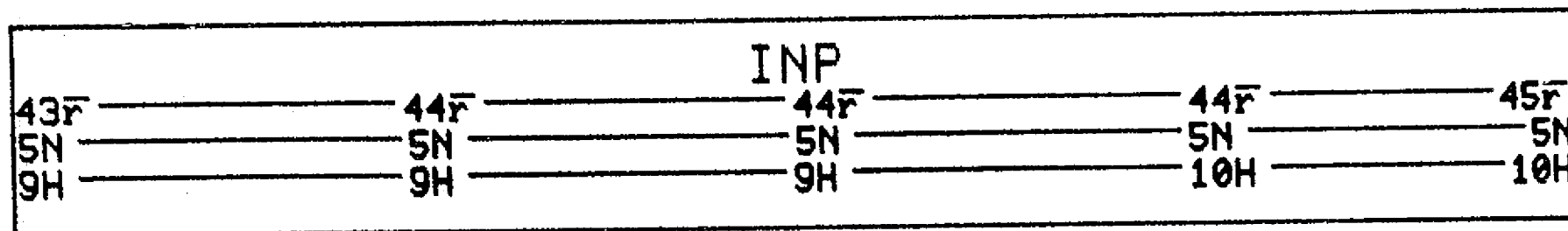


DAY 74 1977

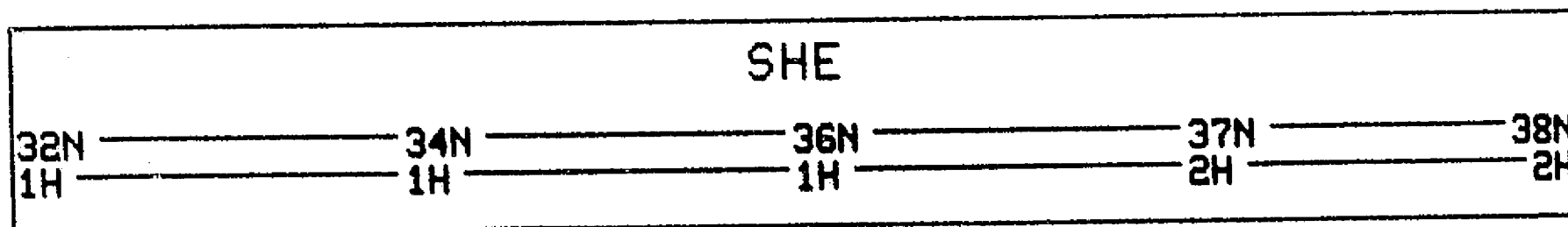


DAY 75 1977

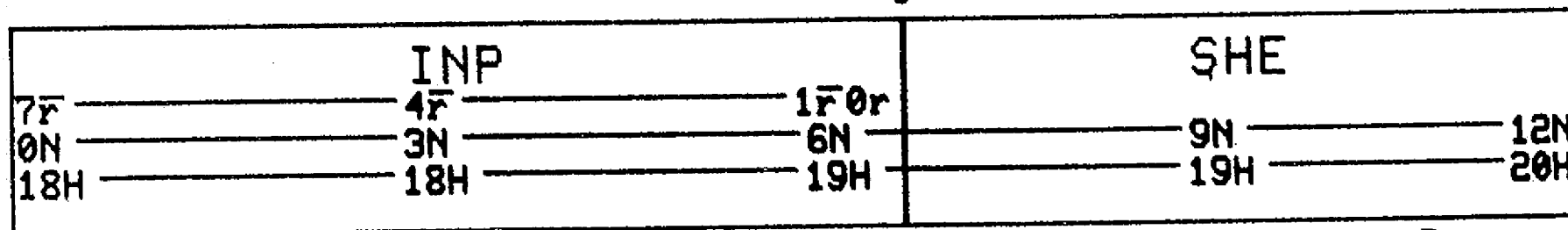
MOON



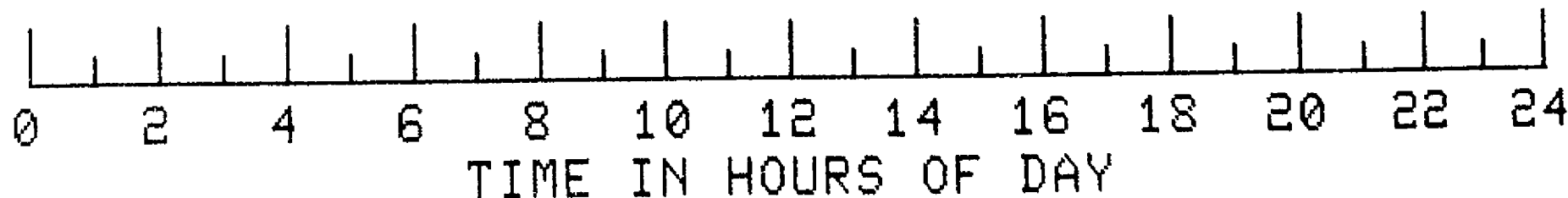
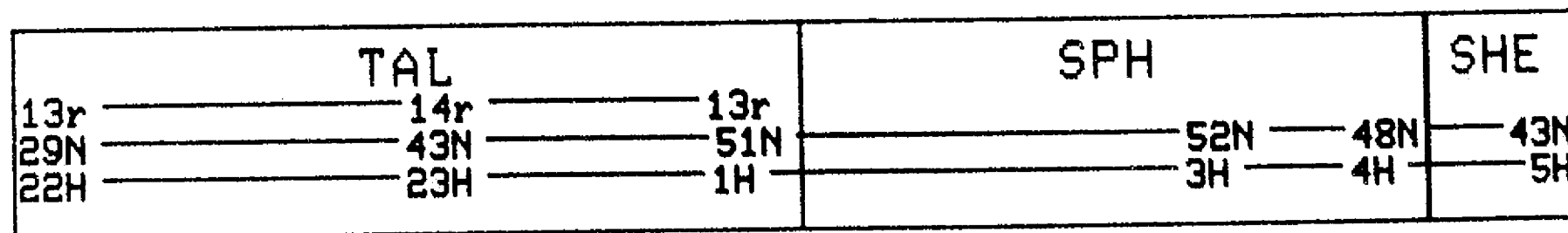
IMP-J



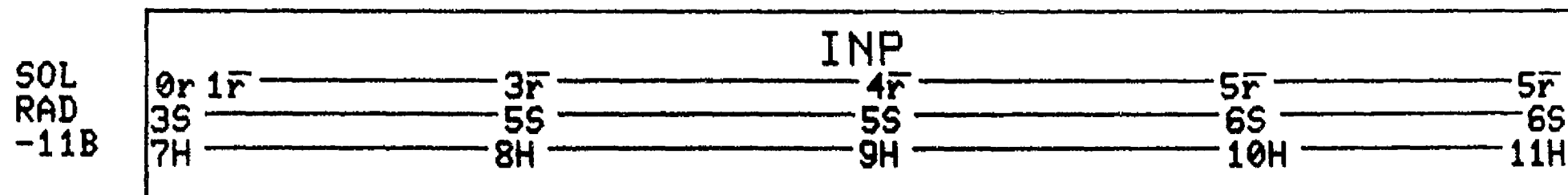
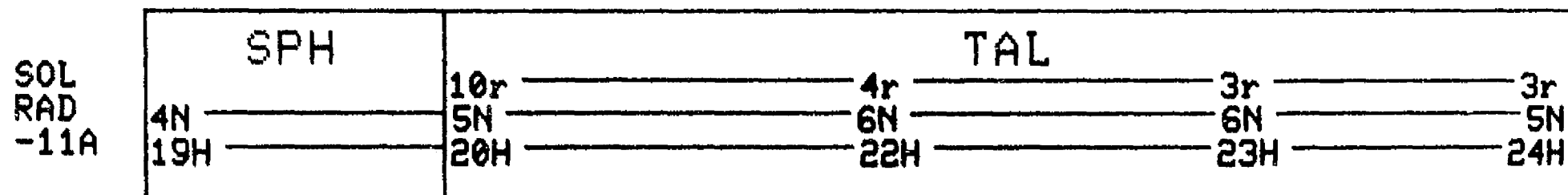
IMP-H



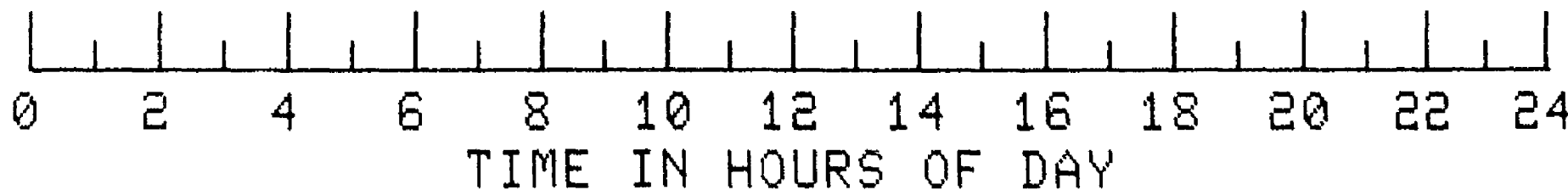
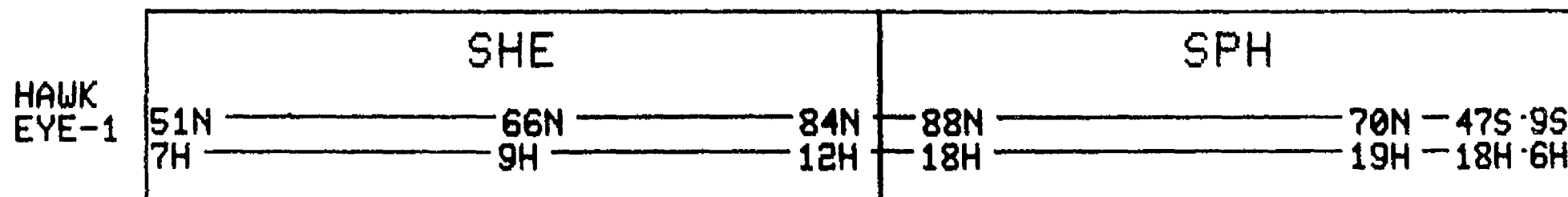
VELA
-5B



DAY 75 1977

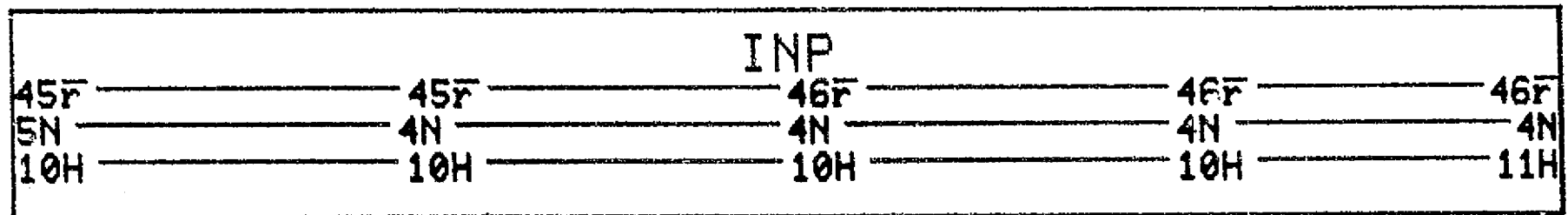


P



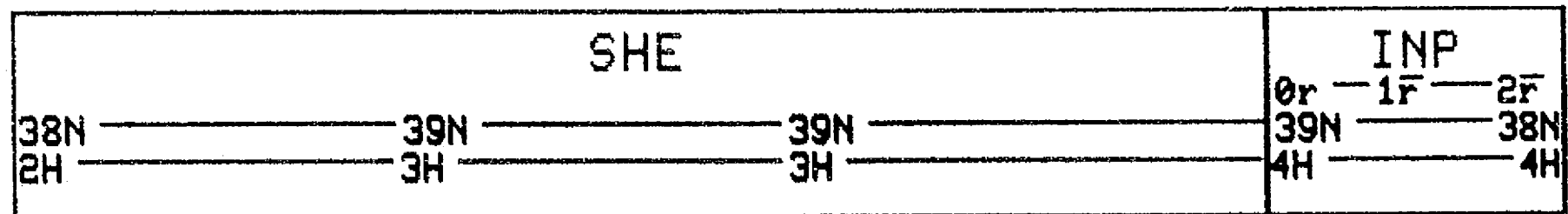
DAY 76 1977

MOON



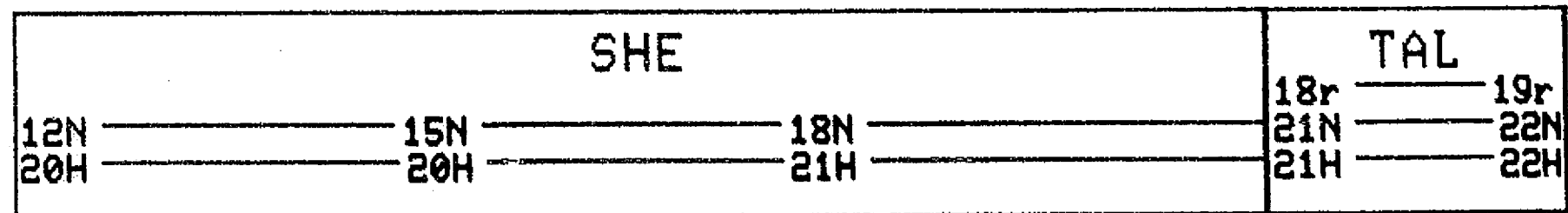
S

IMP-J



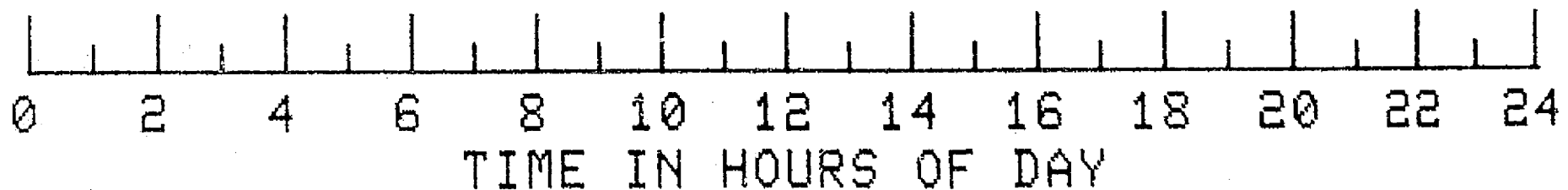
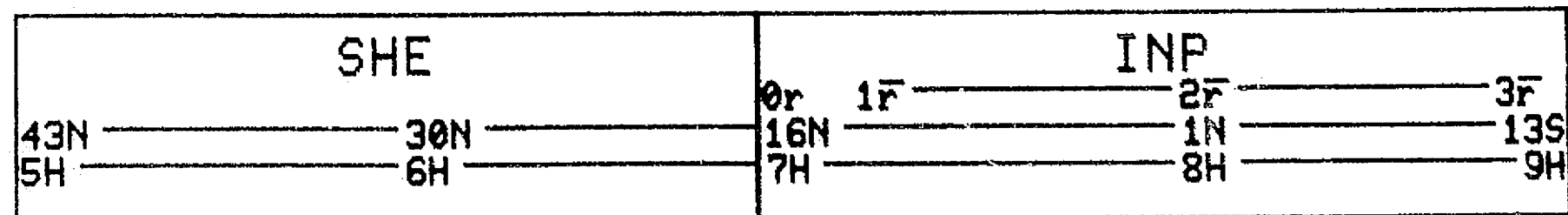
P

IMP-H



S

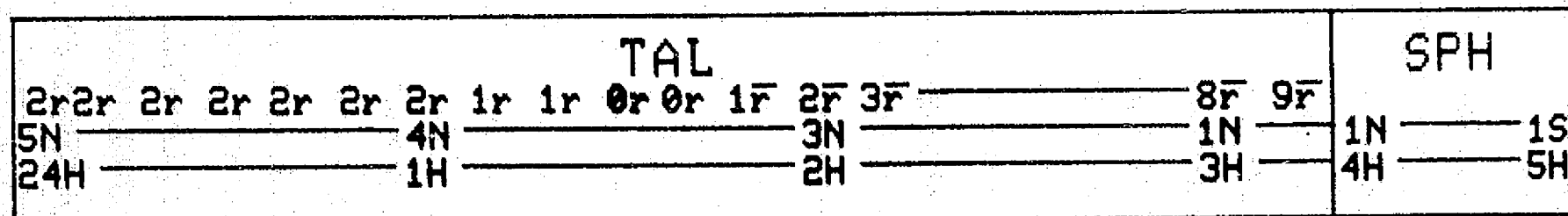
VELA
-5B



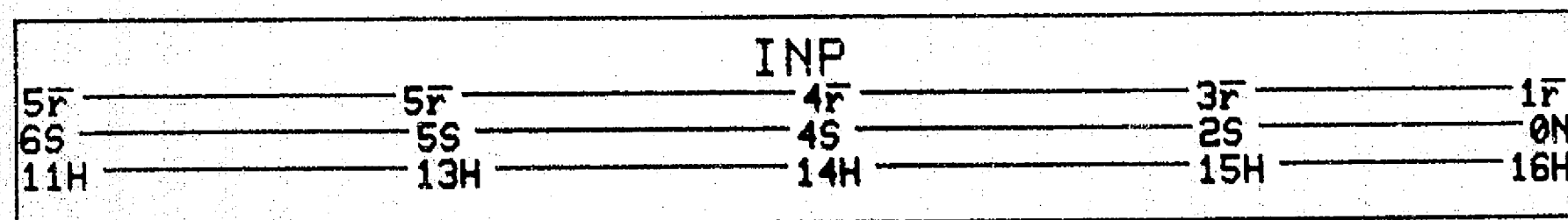
DAY 76 1977

P

SOL
RAD
-11A

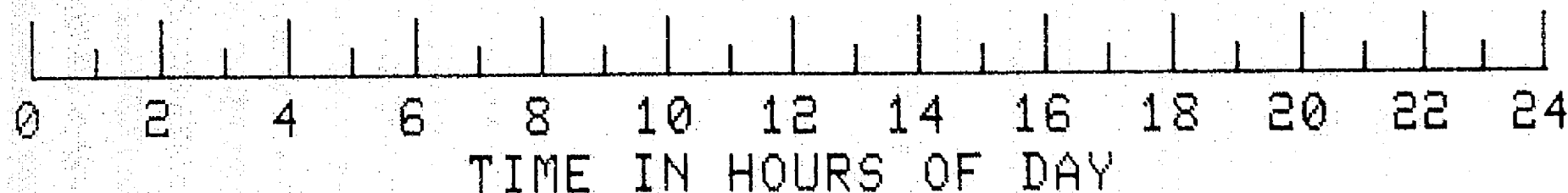
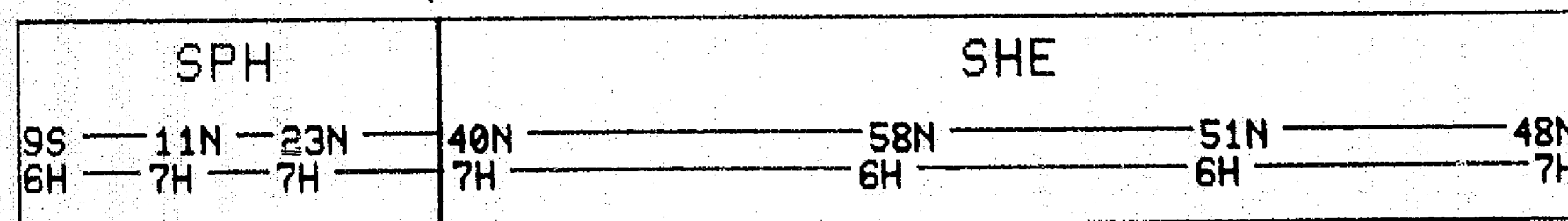


SOL
RAD
-11B



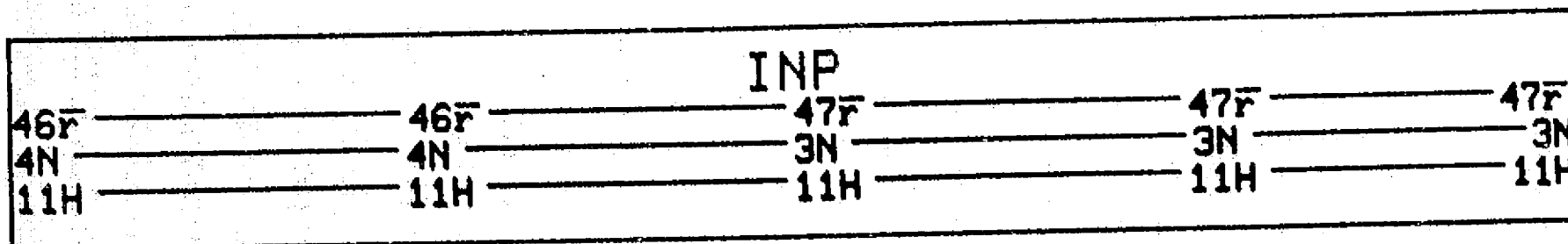
P

HAWK
EYE-1

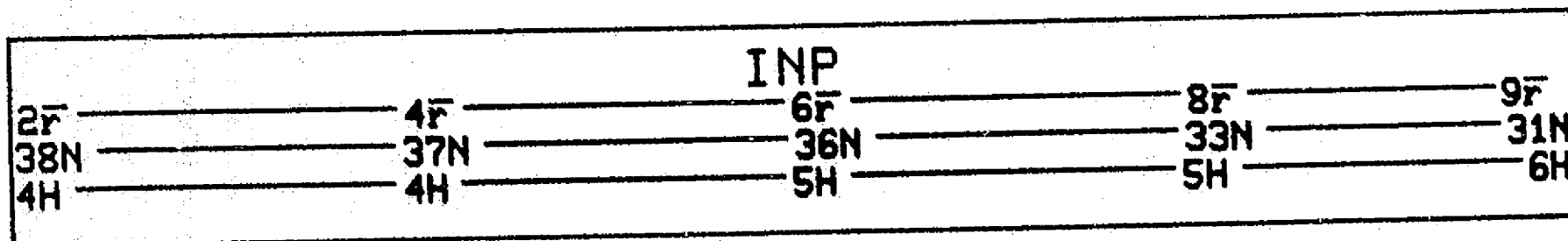


DAY 77 1977

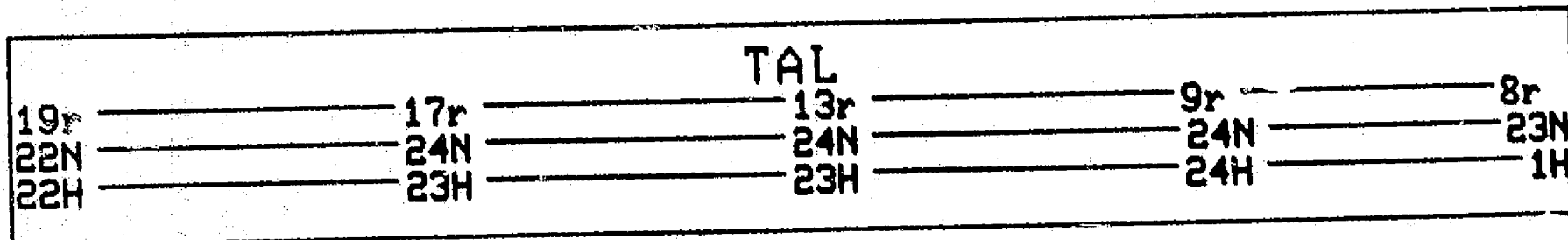
MOON



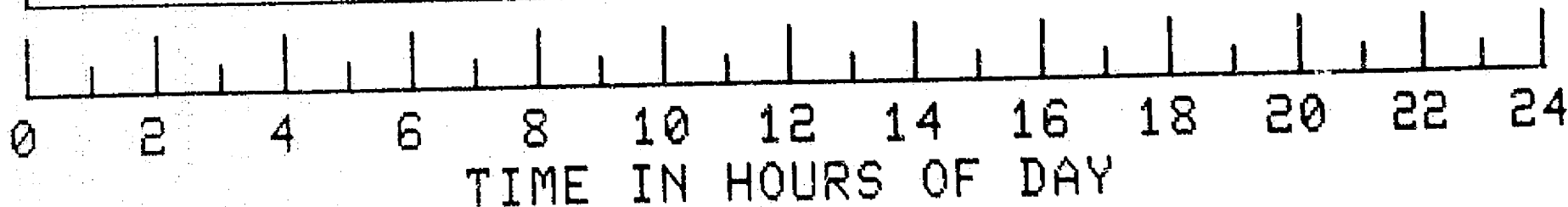
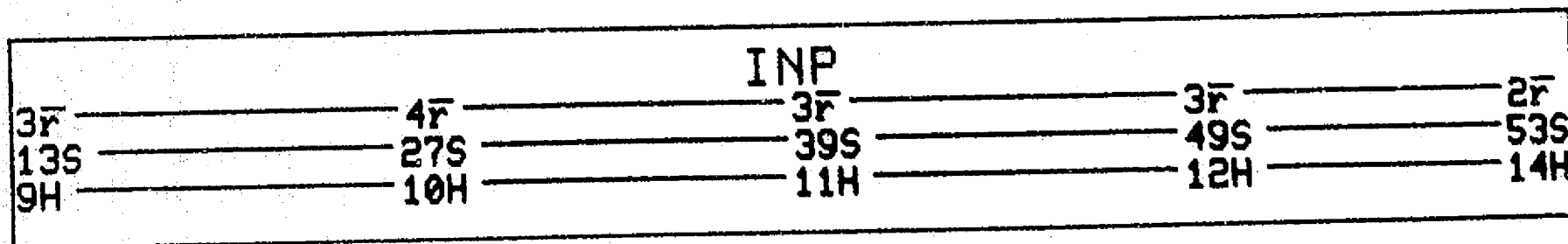
IMP-J



IMP-H



VELA
-5B



DAY 77 1977

S

| | | | |
|-----|--|----|----|
| SHE | | 1S | 5H |
| | | 2S | 6H |
| | | 4S | 7H |
| | | 1P | 3H |
| | | 3P | 5S |
| | | 8H | 9H |
| INP | | 4P | 6S |

SOL
RAD
-11A

S

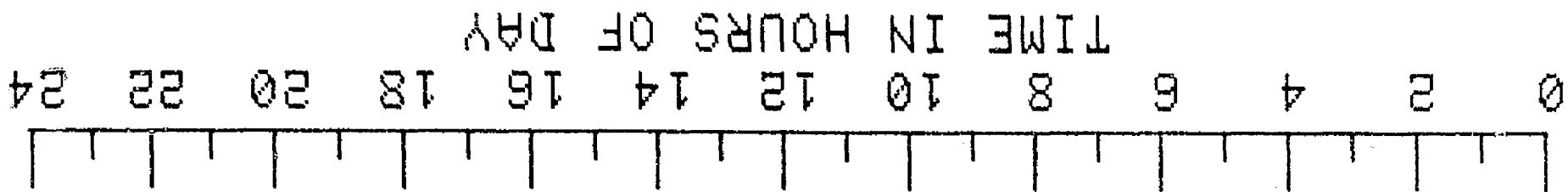
| | | | |
|-----|--|-----|-----|
| SHE | | 1N | 16H |
| | | 1N | 17H |
| | | 3N | 18H |
| | | 4N | 19H |
| | | 5N | 20H |
| | | 10P | 21H |
| | | 10P | 21H |
| SPH | | TAL | |

SOL
RAD
-11B

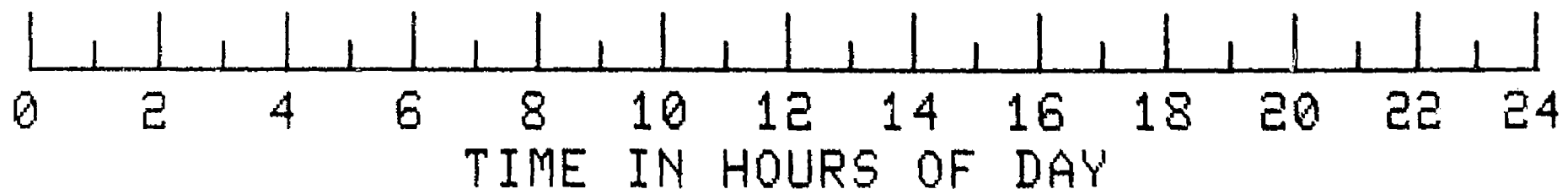
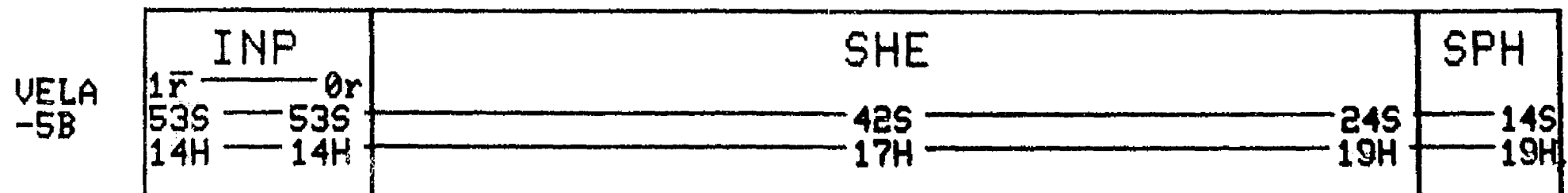
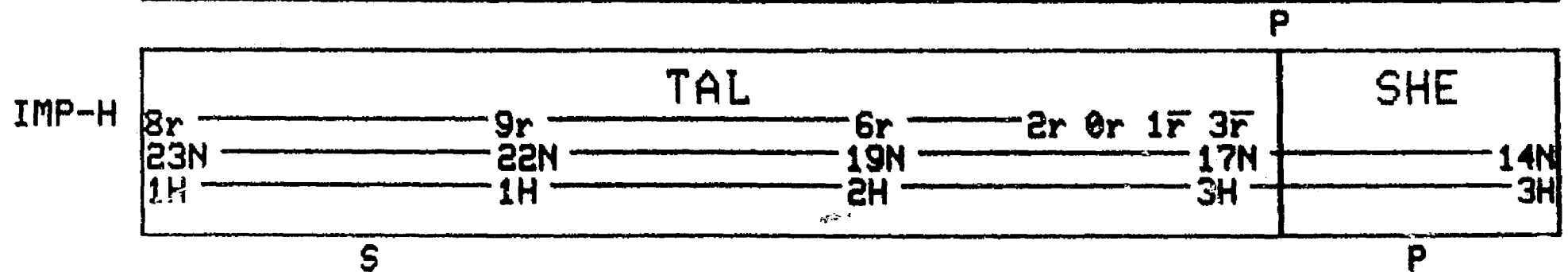
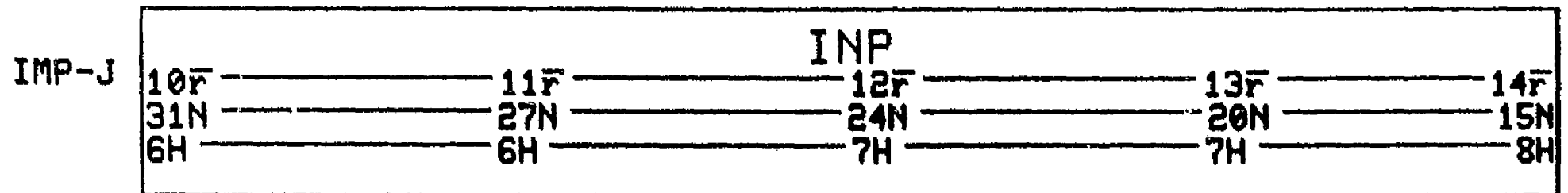
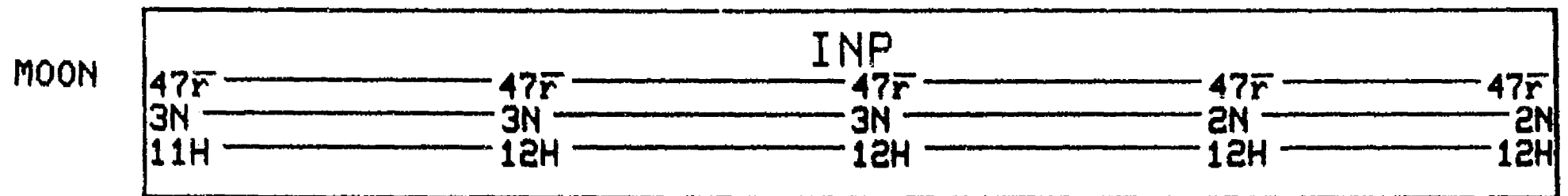
P

| | | | |
|-----|--|-----|-----|
| SHE | | 48N | 7H |
| | | 64N | 9H |
| | | 85N | 8H |
| | | 82N | 3H |
| | | 88N | 61N |
| | | 19H | 18H |
| SPH | | | |

HAWK
EYE-1

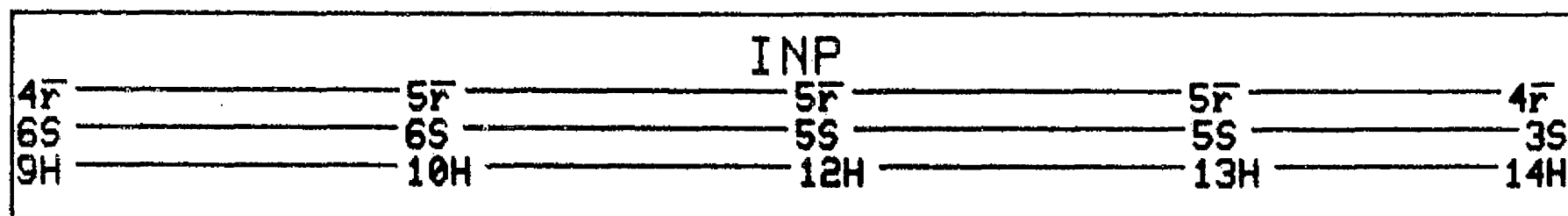


DAY 78 1977

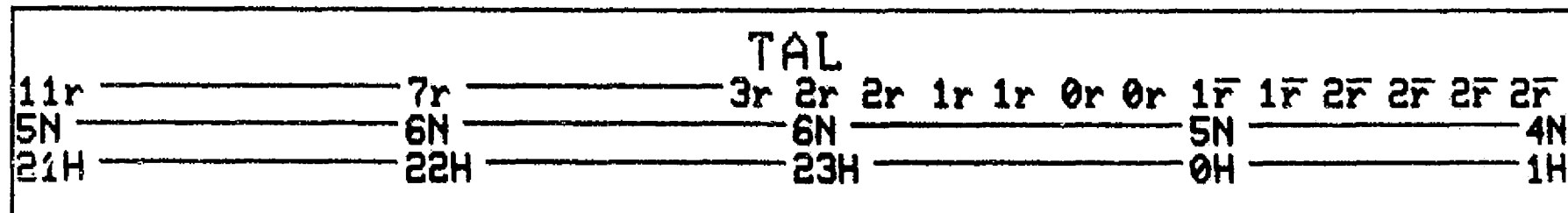


DAY 78 1977

SOL
RAD
-11A

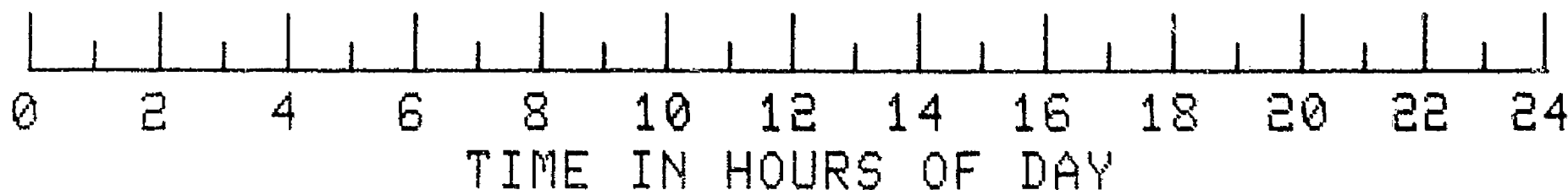
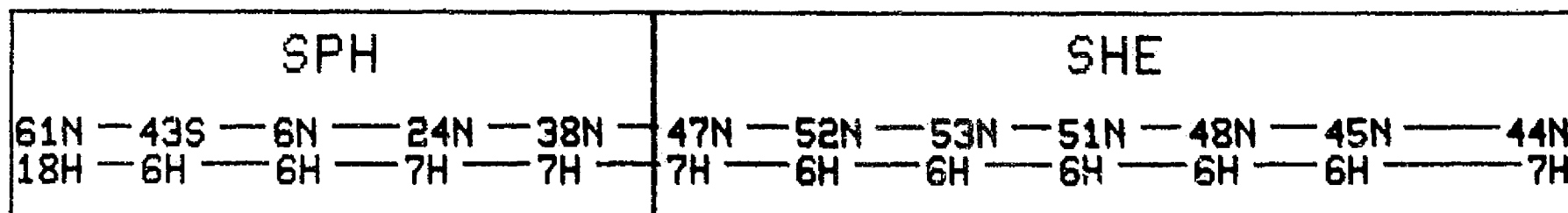


SOL
RAD
-11B



P

HAWK
EYE-1



DAY 79 1977

MOON

| INP | | | | |
|-----|-----|-----|-----|-----|
| 47r | 47r | 47r | 47r | 47r |
| 2N | 2N | 1N | 1N | 1N |
| 12H | 12H | 13H | 13H | 13H |

IMP-J

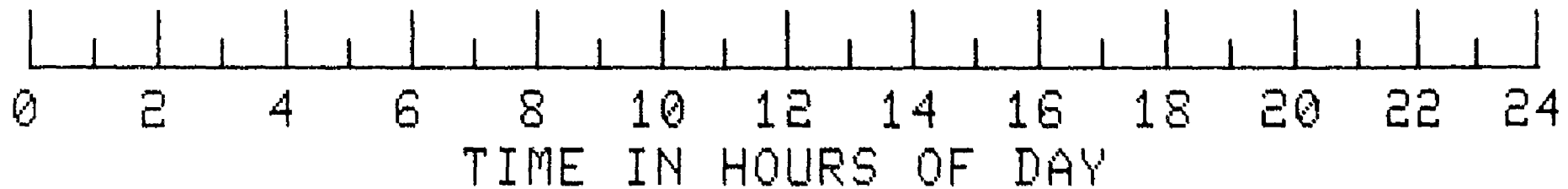
| INP | | | | |
|-----|-----|-----|-----|-----|
| 14r | 14r | 14r | 14r | 14r |
| 15N | 10N | 4N | 2S | 8S |
| 8H | 8H | 9H | 9H | 10H |

IMP-H

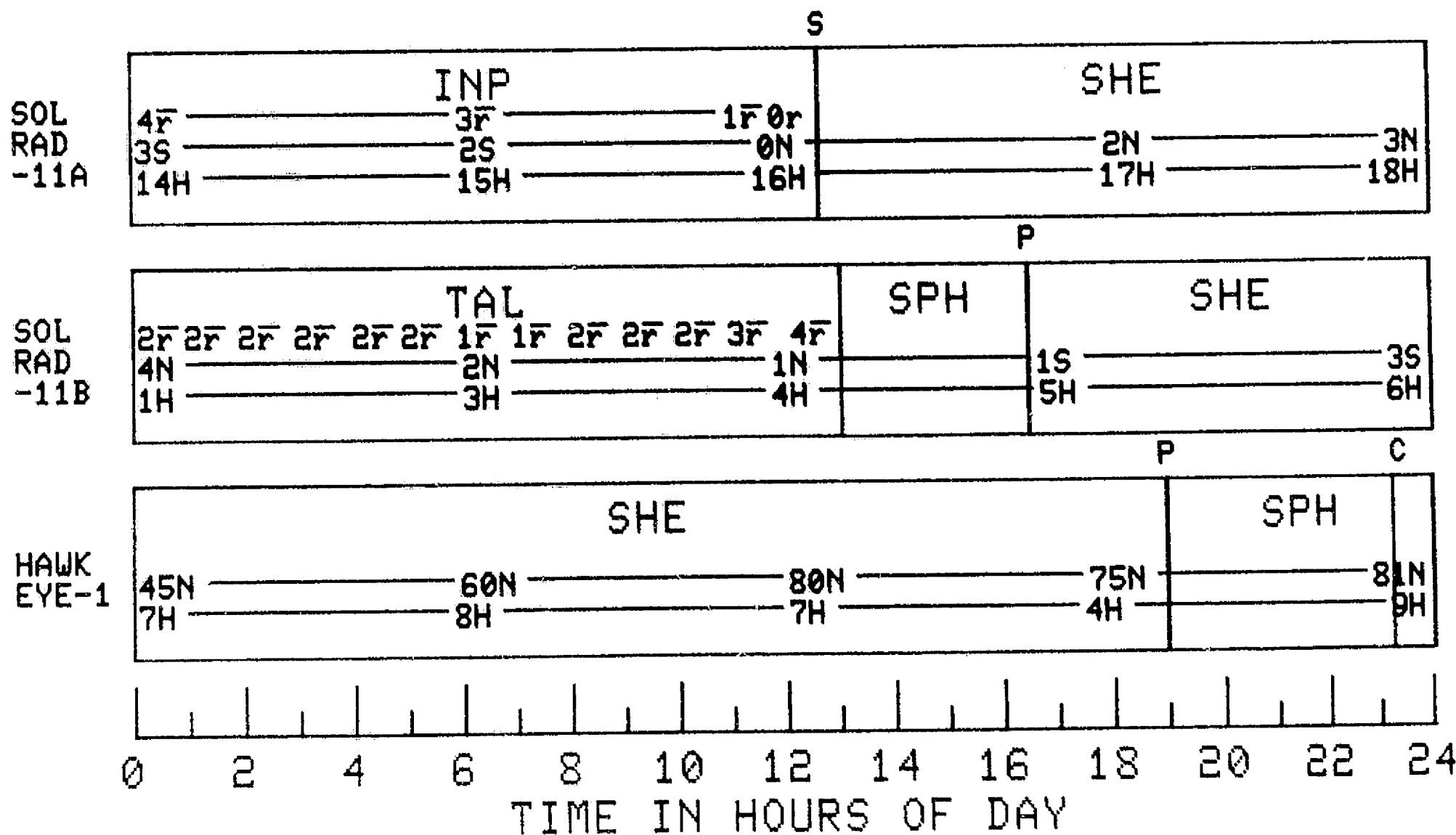
| SHE | | | S | | | INF | | |
|-----|-----|----|----|----|----|-----|----|----|
| 14N | 10N | 7N | 0r | 0r | 1r | 4r | 0N | 0N |
| 3H | 4H | 4H | 4N | 3N | 5H | 5H | 5H | 5H |

VELA
-5B

| SPH | | | TAL | | | | | |
|-----|-----|----|-----|-----|-----|-----|-----|-----|
| 14S | 3N | 7r | 8r | 10r | 12r | 35N | 48N | 48N |
| 19H | 20H | 8N | 19N | 22H | 24H | 22H | 24H | 24H |

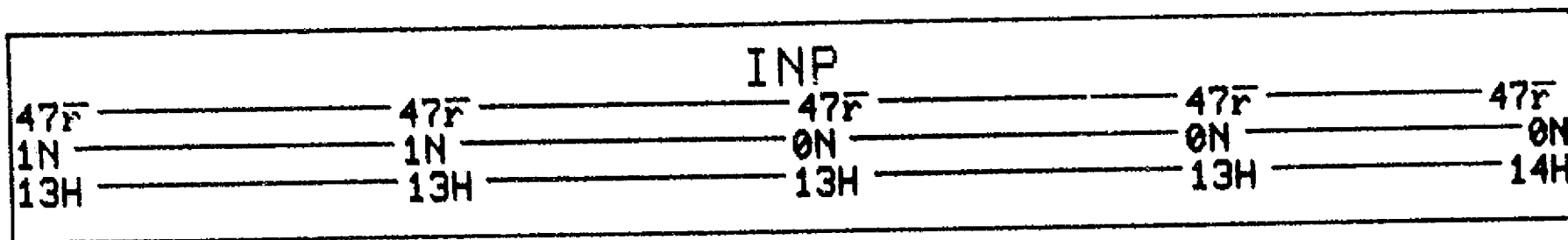


DAY 79 1977

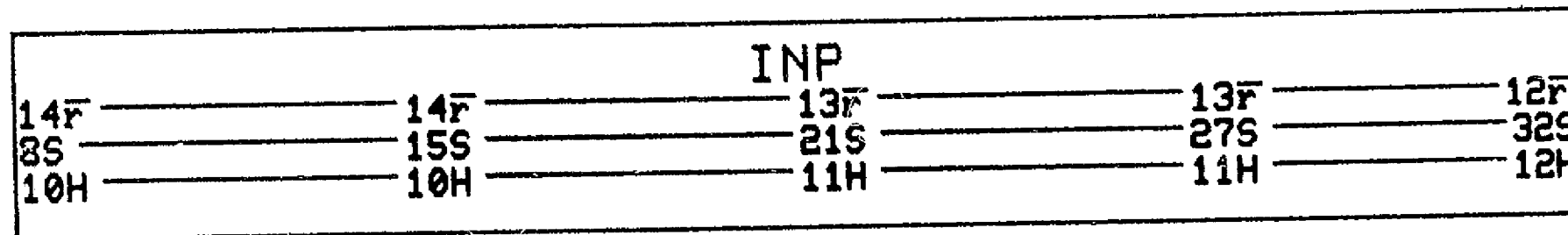


DAY 80 1977

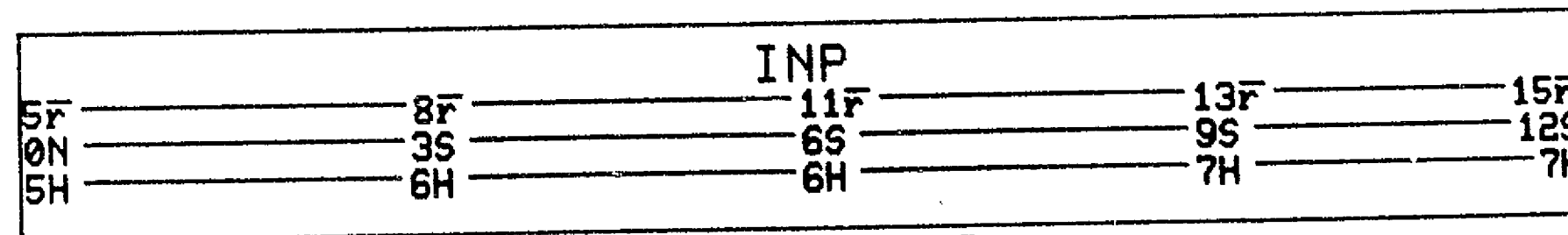
MOON



IMP-J

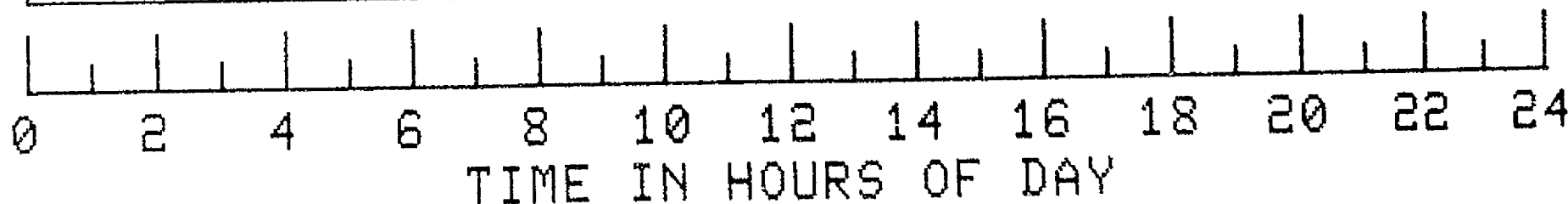
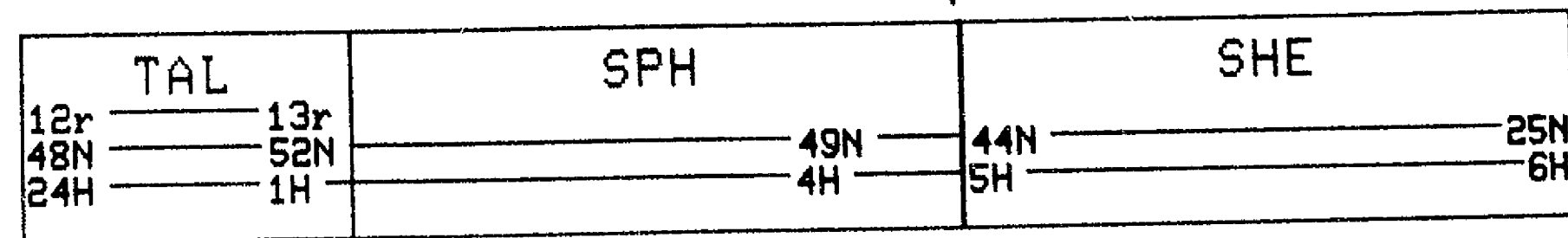


IMP-H

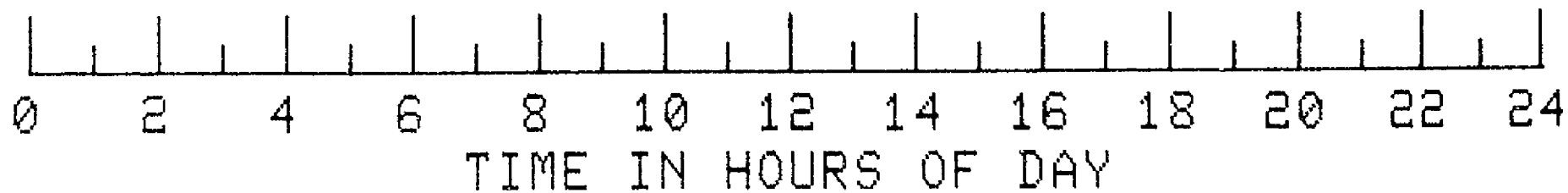
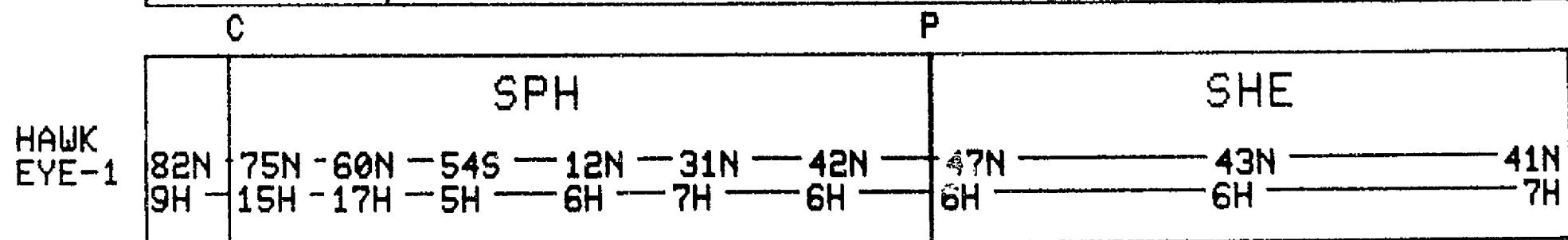
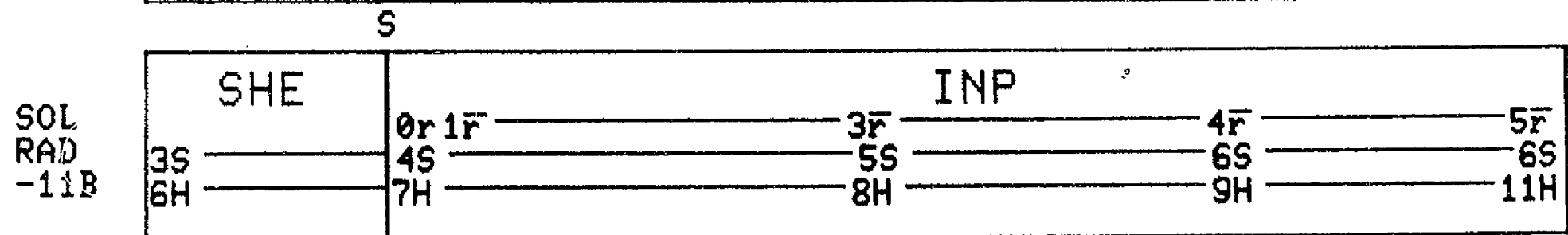
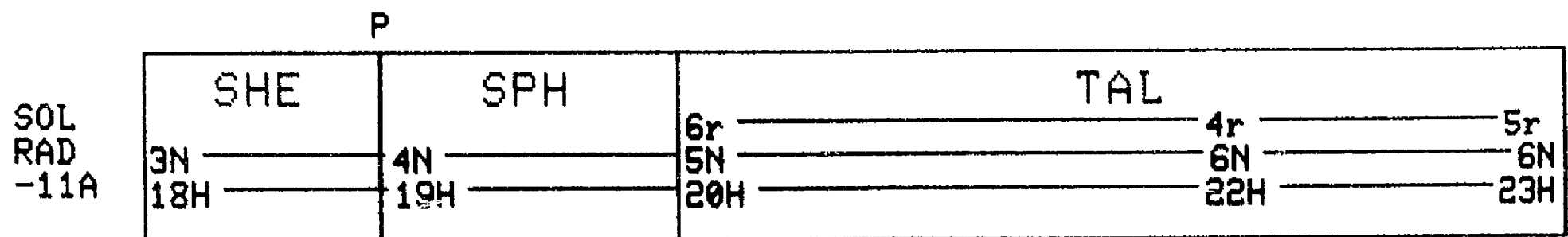


P

VELA
-5B

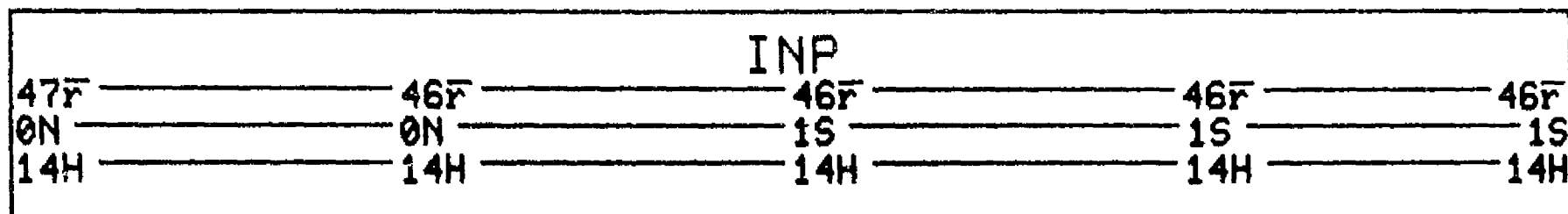


DAY 80 1977

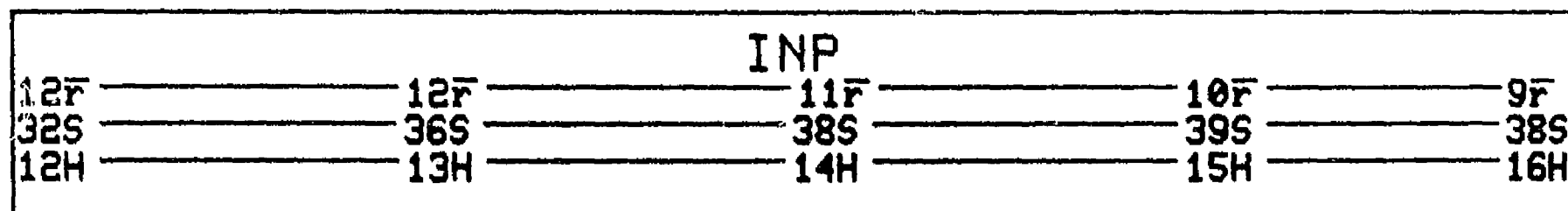


DAY 81 1977

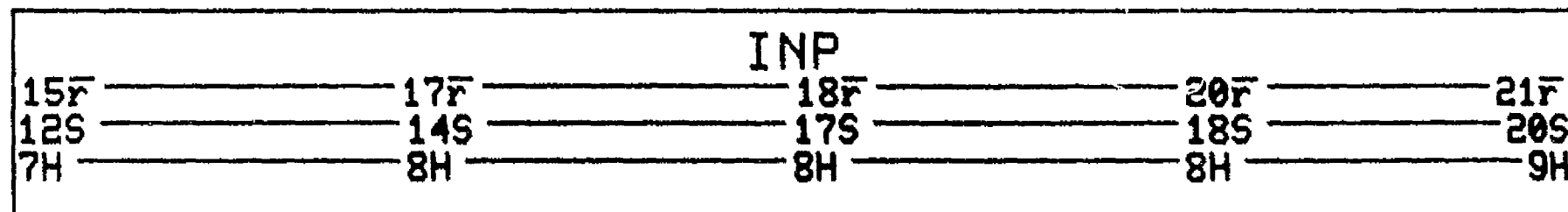
MOON



IMP-J

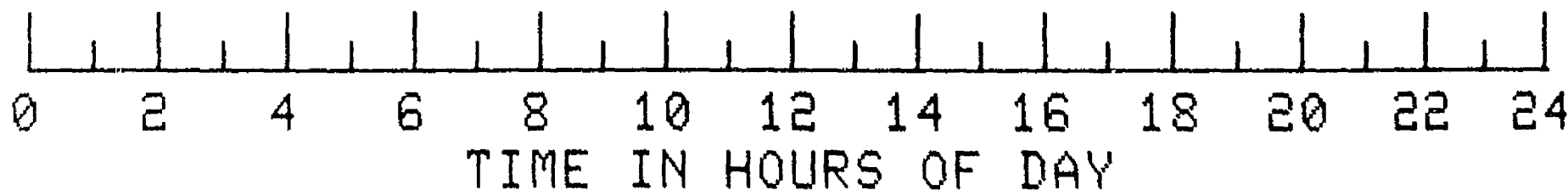
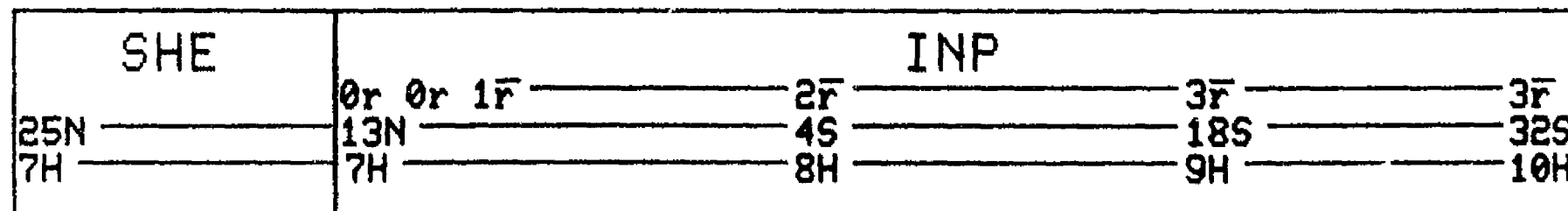


IMP-H



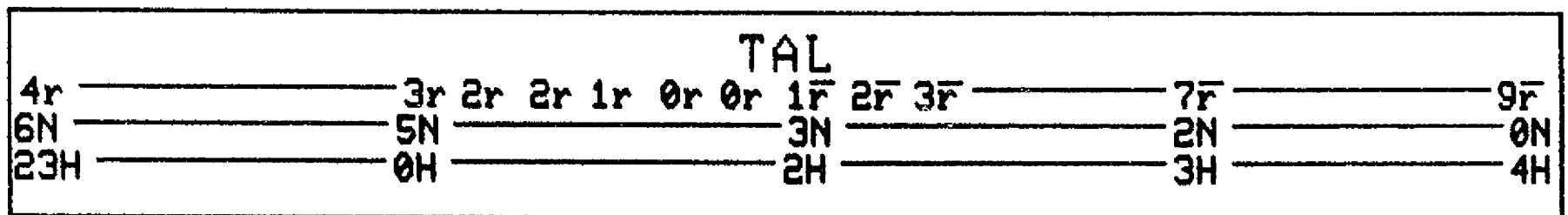
S

VELA
-5B

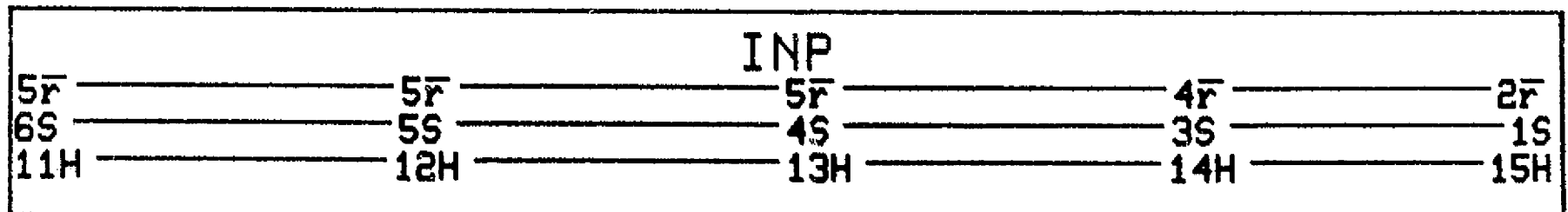


DAY 81 1977

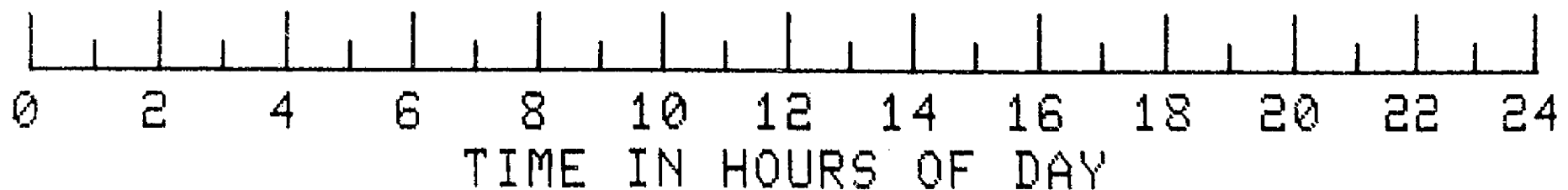
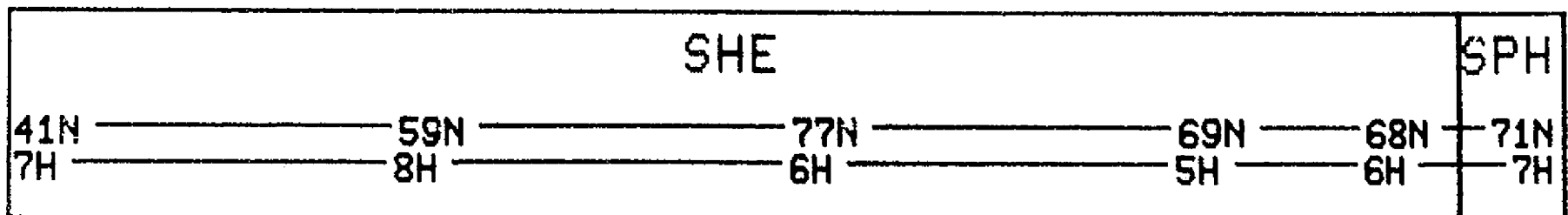
SOL
RAD
-11A



SOL
RAD
-11B

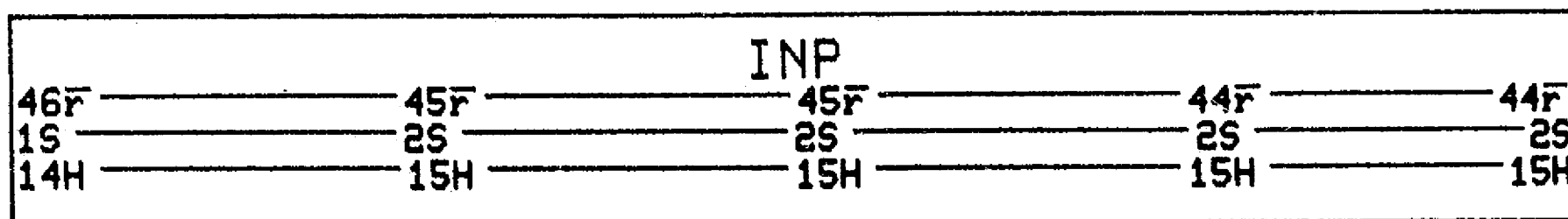


HAWK
EYE-1

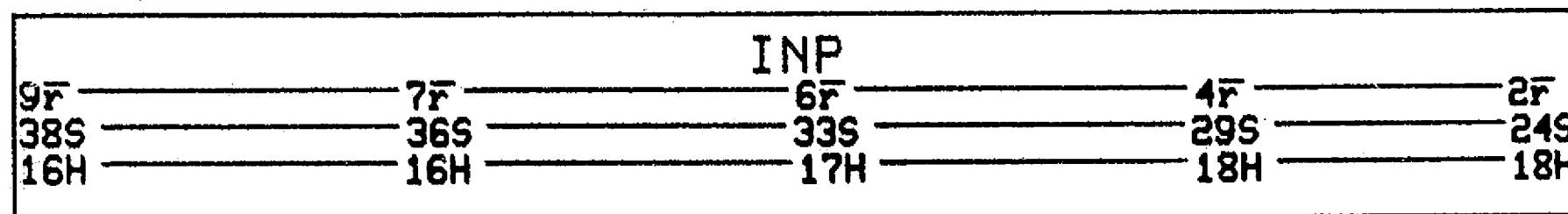


DAY 82 1977

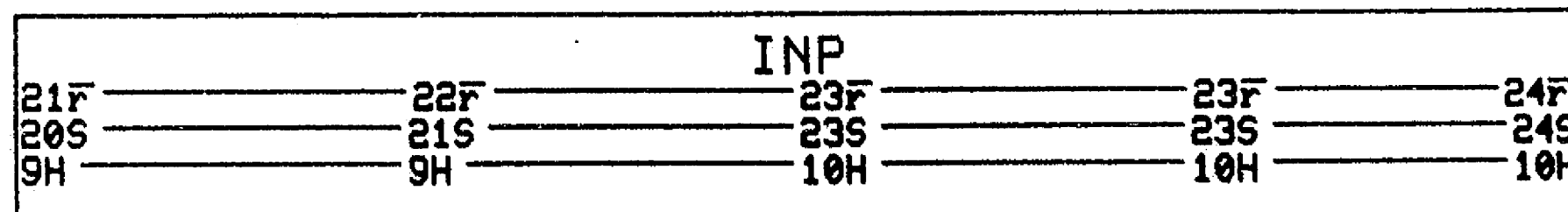
MOON



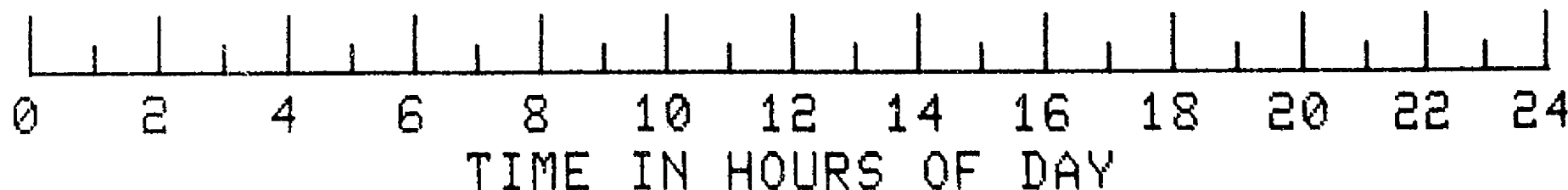
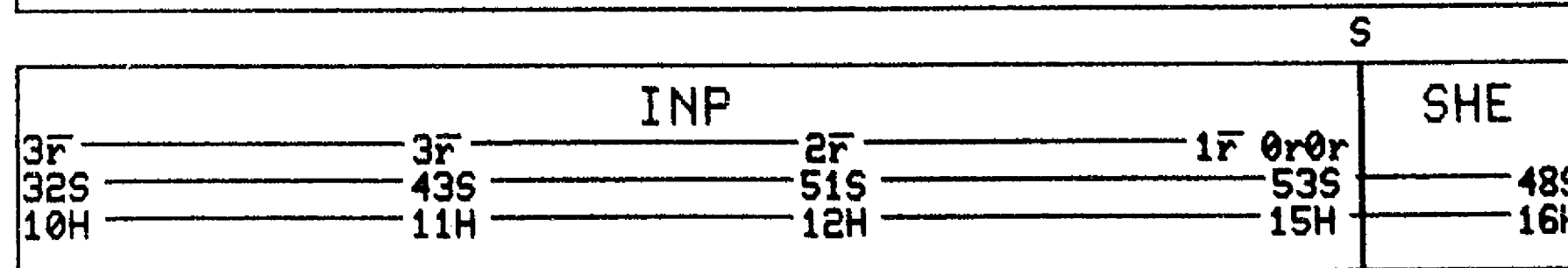
IMP-J



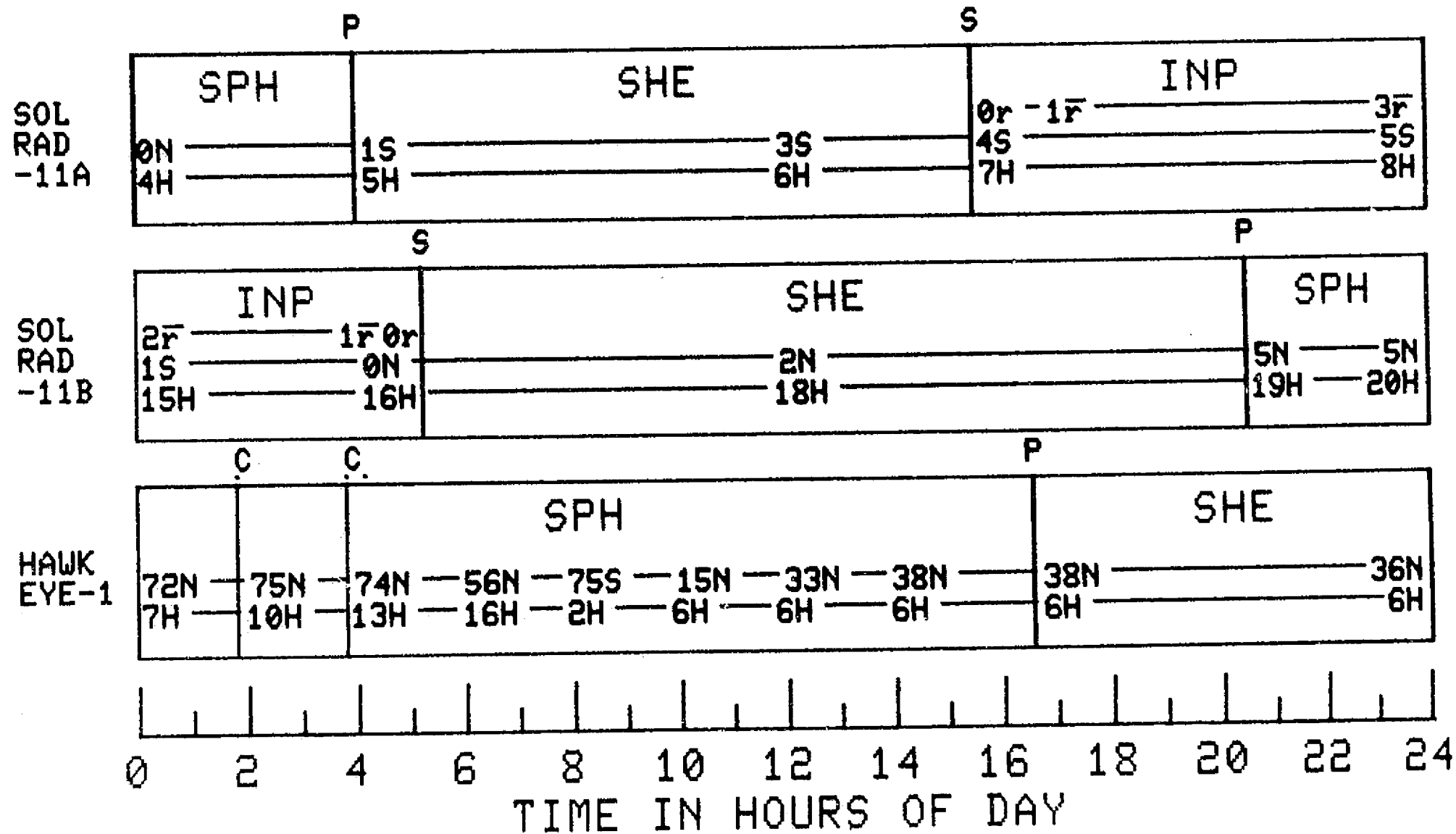
IMP-H



VELA
-5B

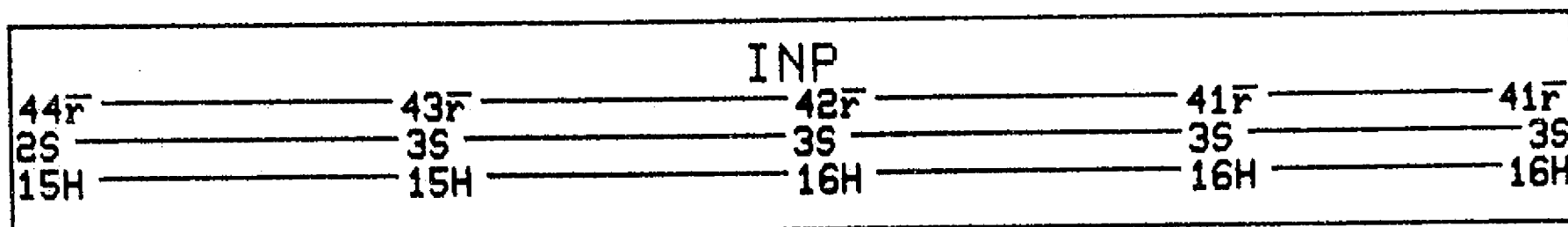


DAY 82 1977



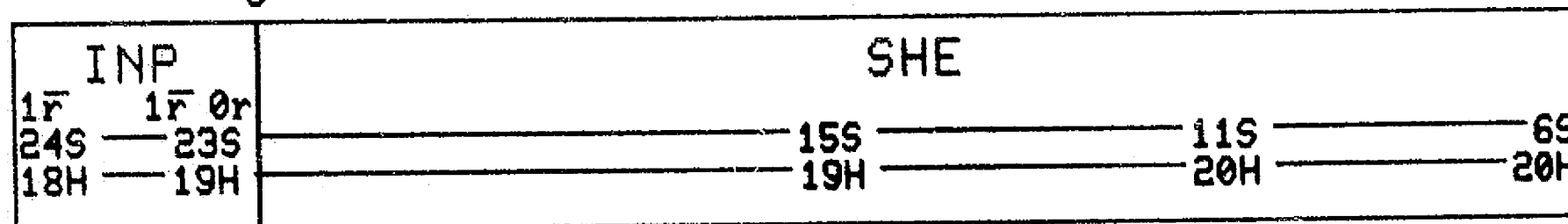
DAY 83 1977

MOON

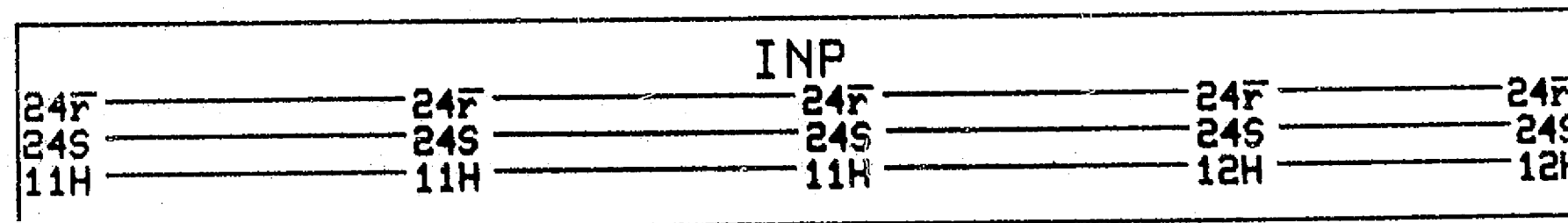


S

IMP-J

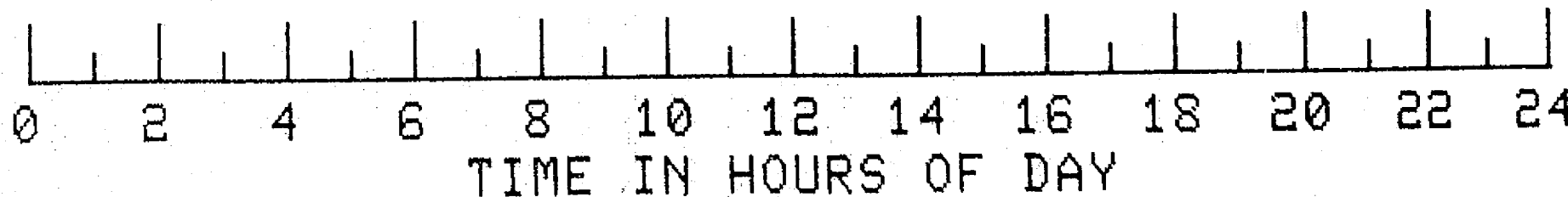
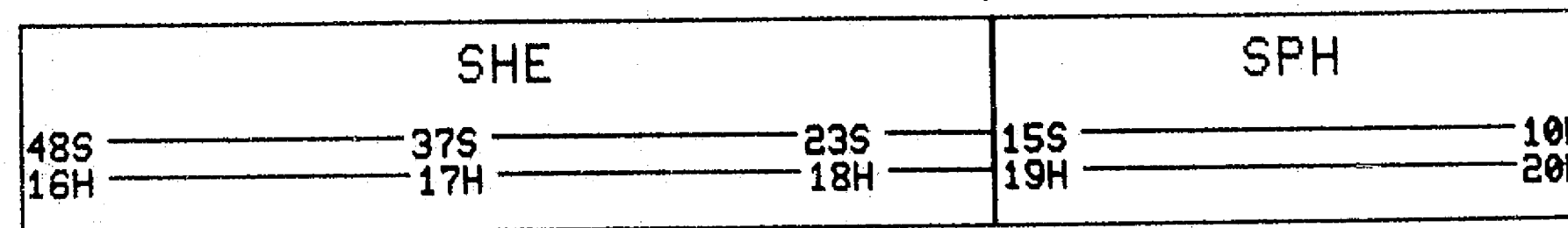


IMP-H



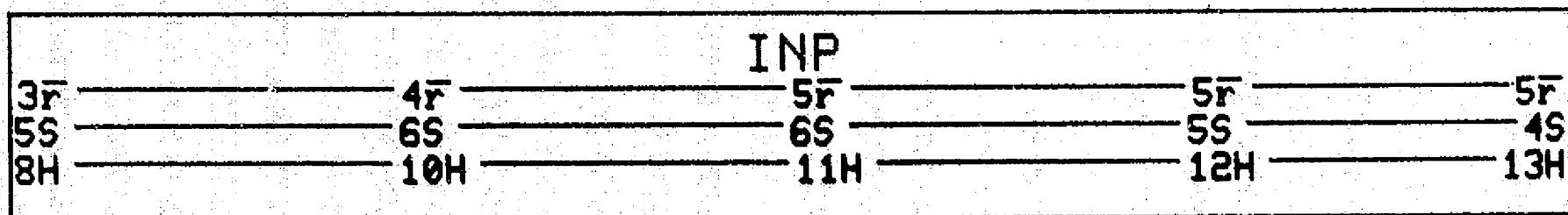
P

VELA
-5B

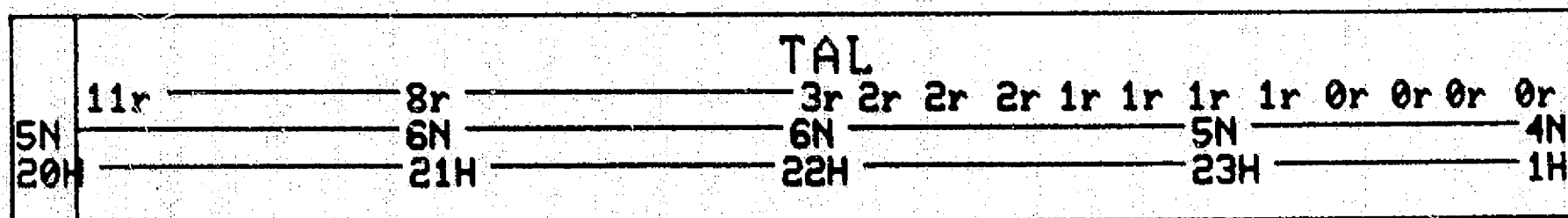


DAY 83 1977

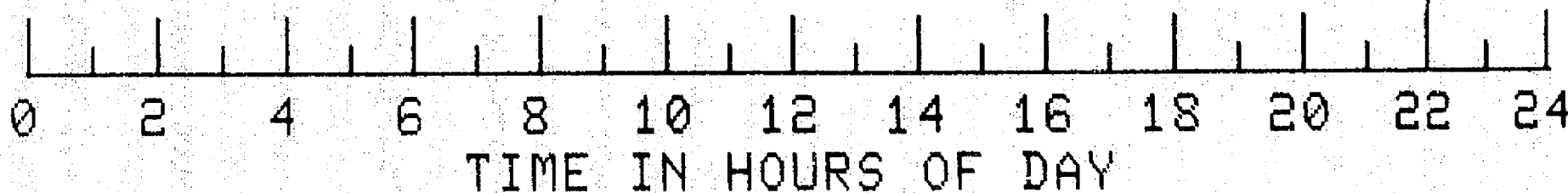
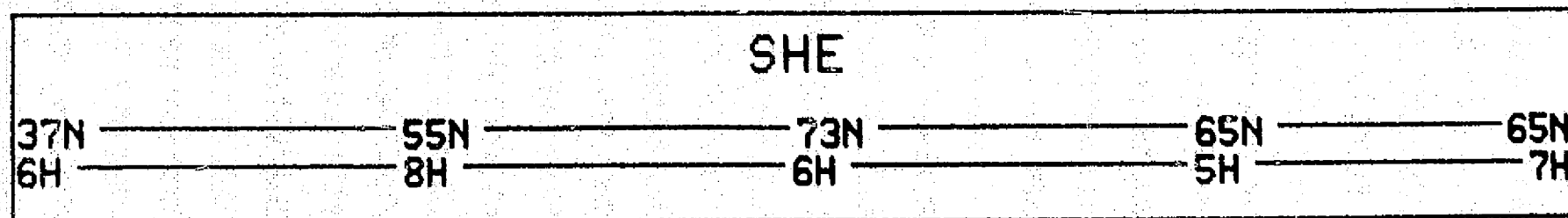
SOL
RAD
-11A



SOL
RAD
-11B

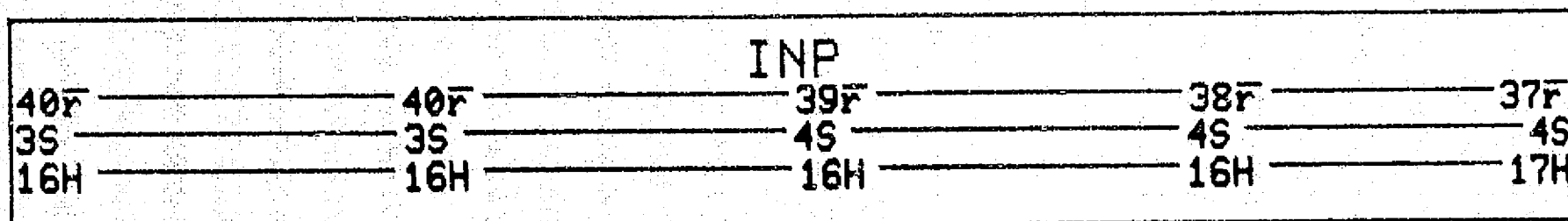


HAWK
EYE-1

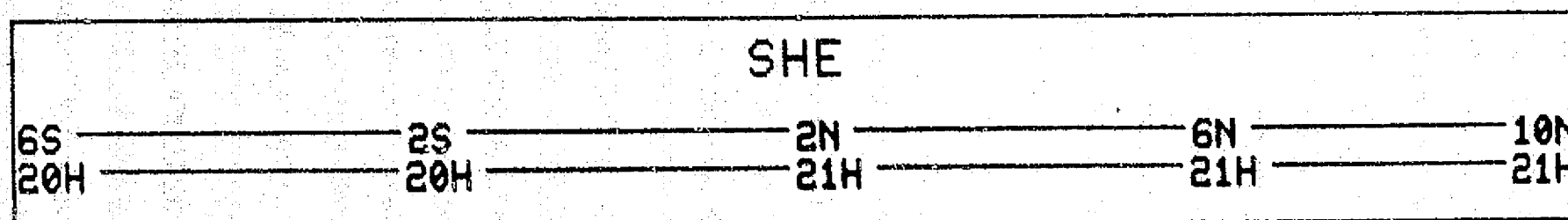


DAY 84 1977

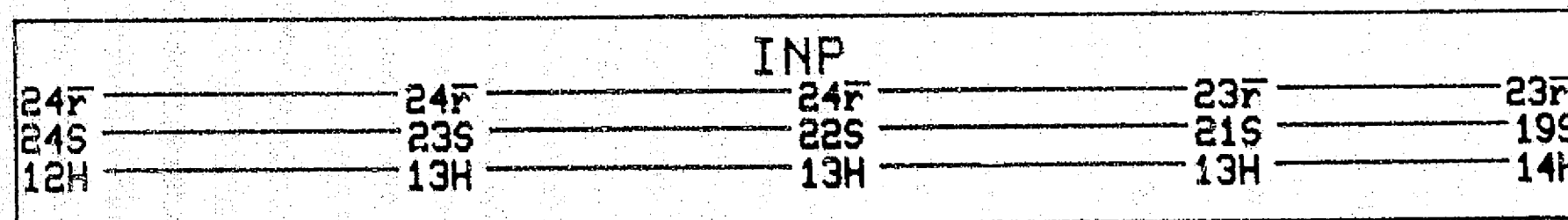
MOON



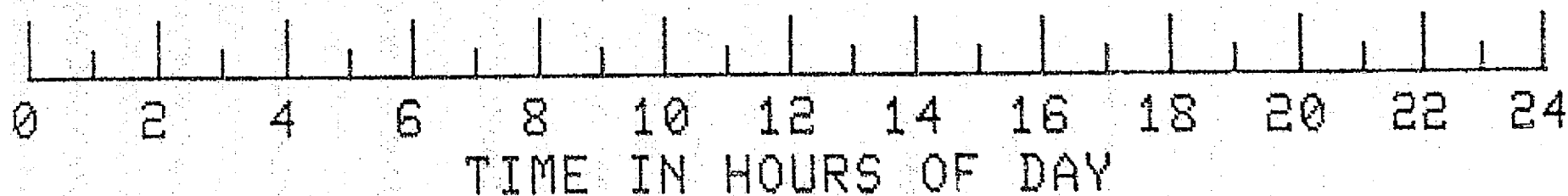
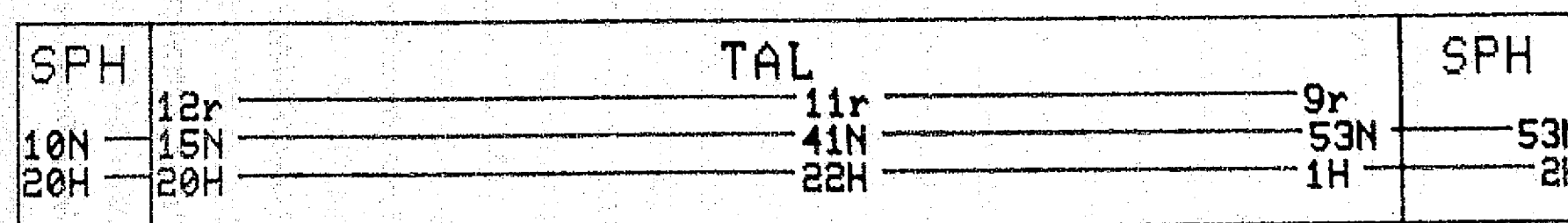
IMP-J



IMP-H

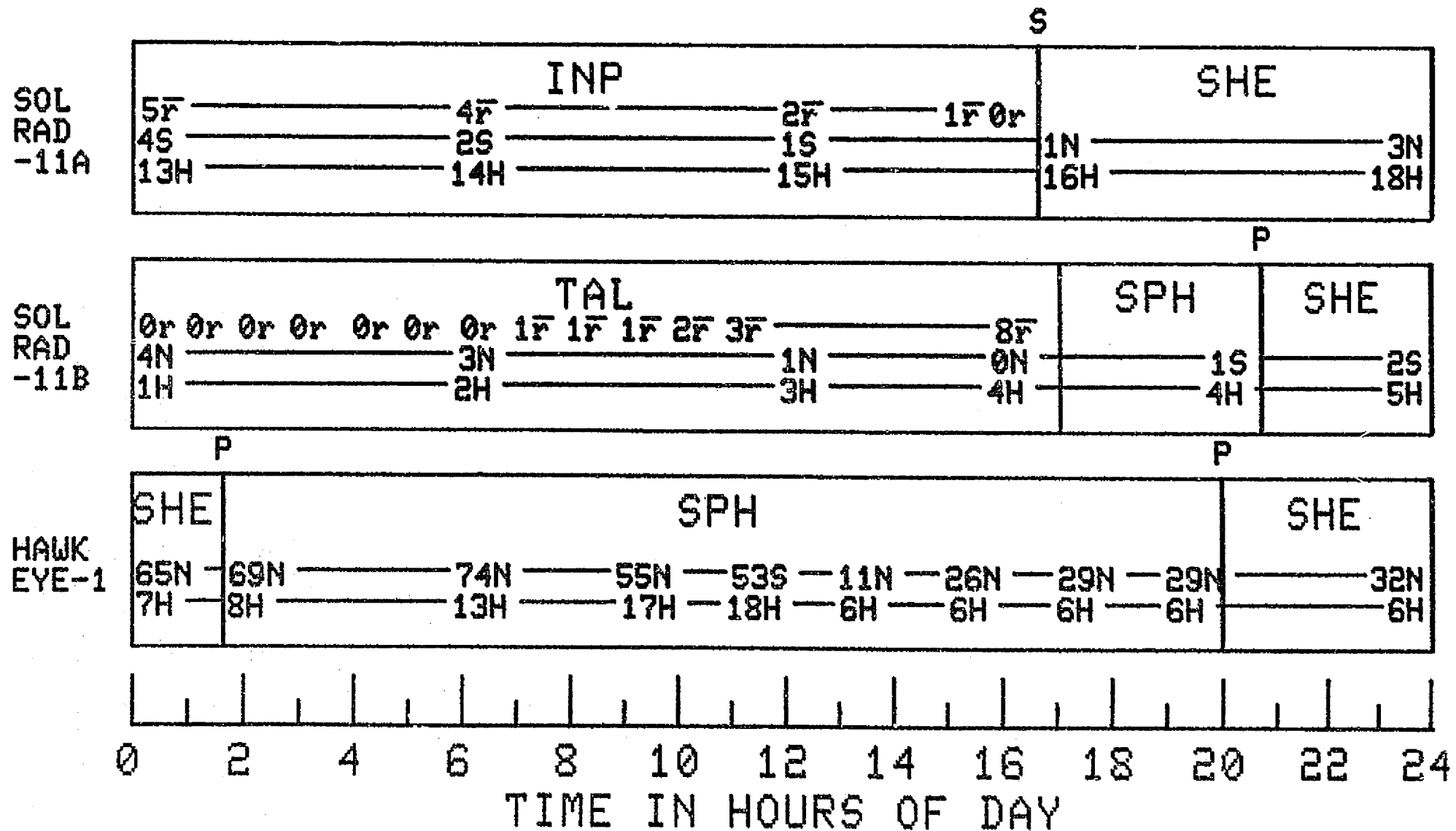


VELA
-5B



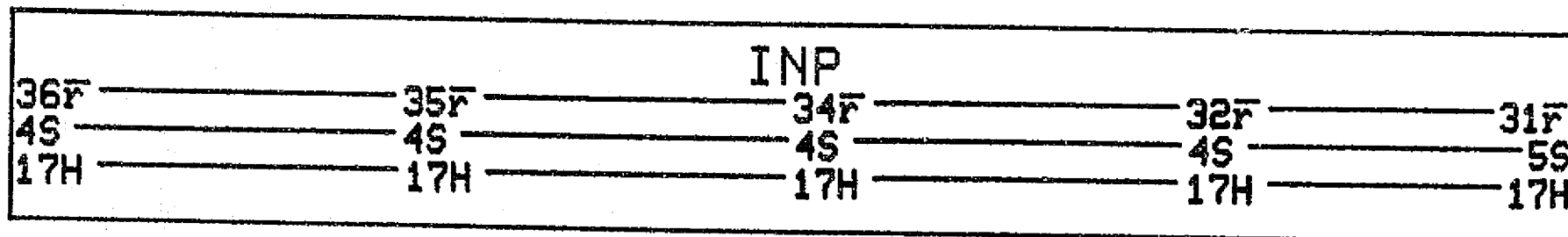
C
W

DAY 84 1977

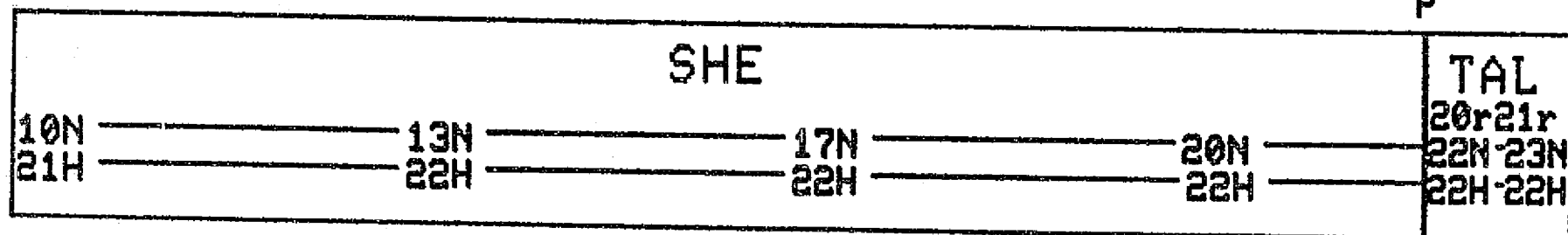


DAY 85 1977

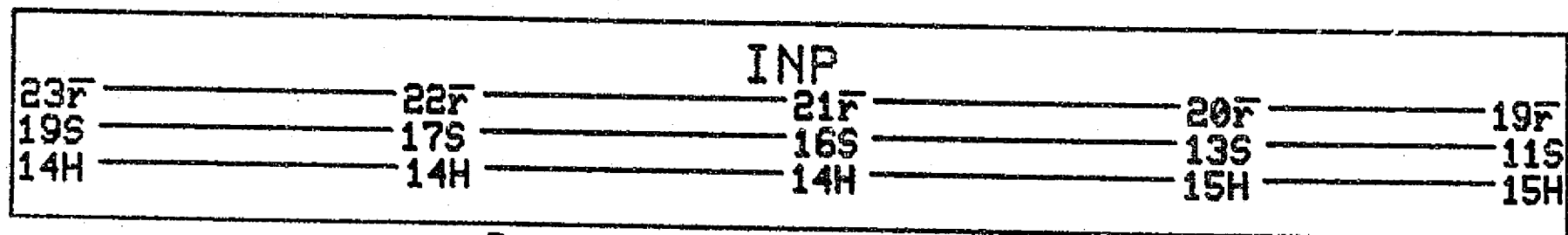
MOON



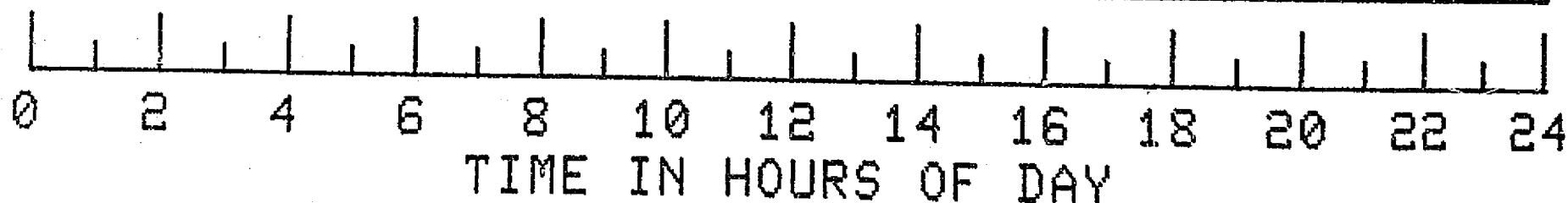
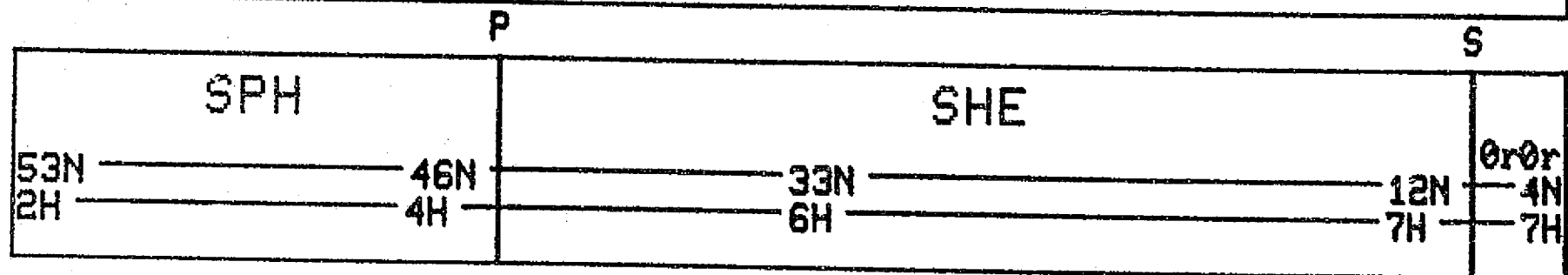
IMP-J



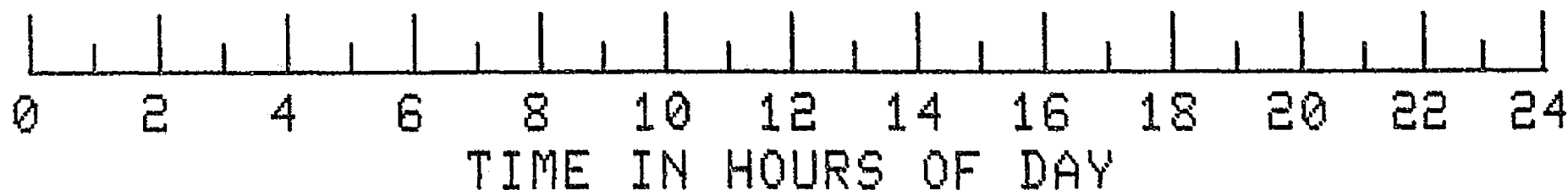
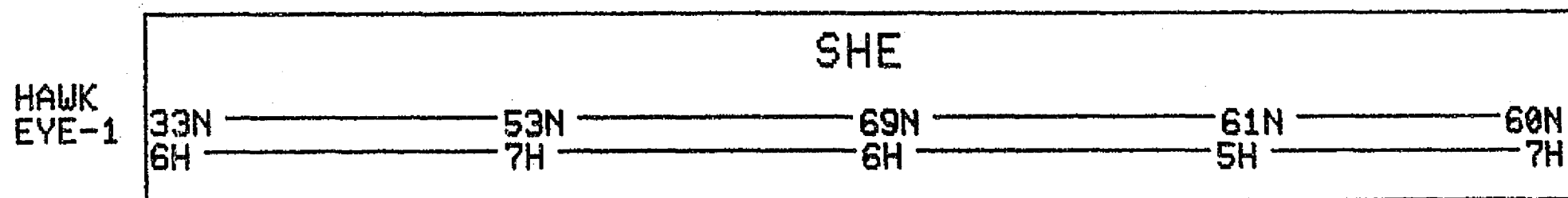
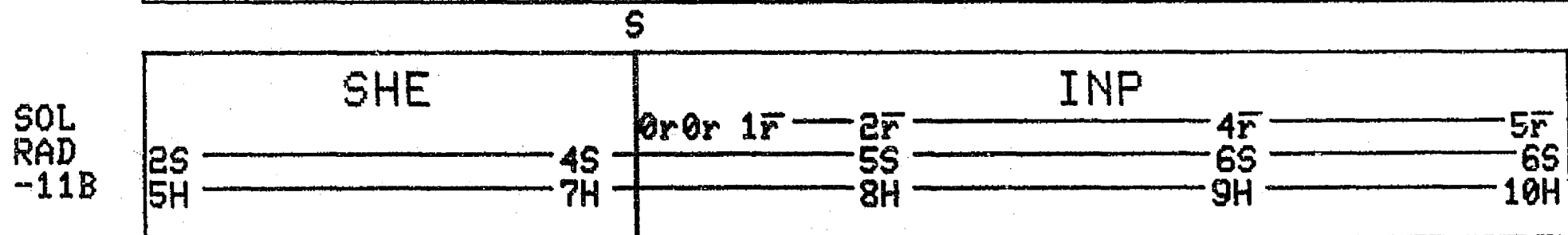
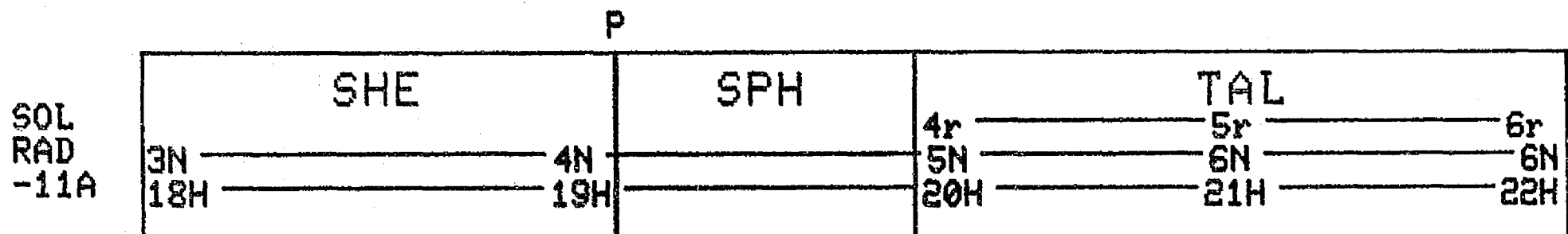
IMP-H



VELA
-5B

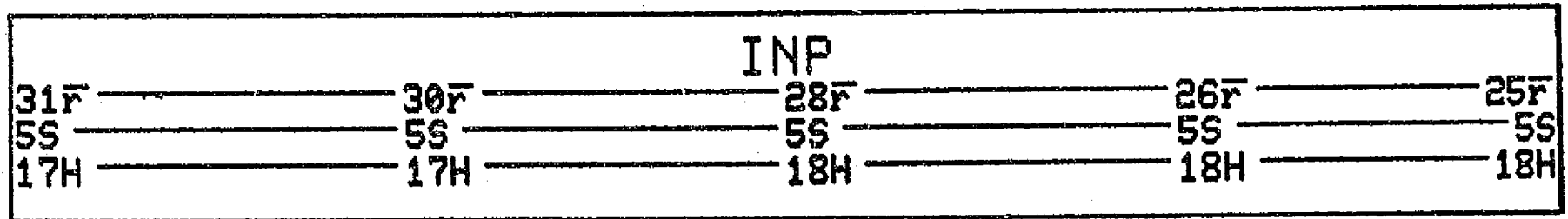


DAY 85 1977



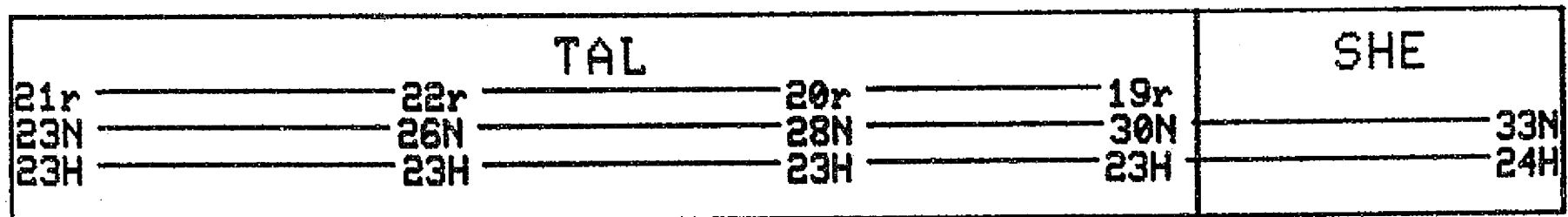
DAY 86 1977

MOON

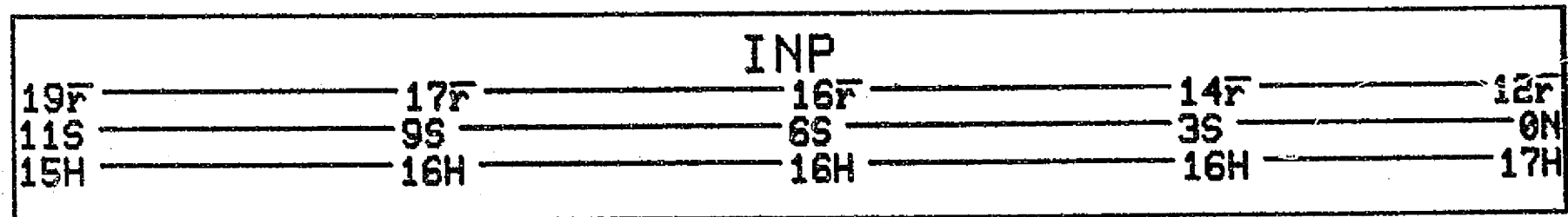


P

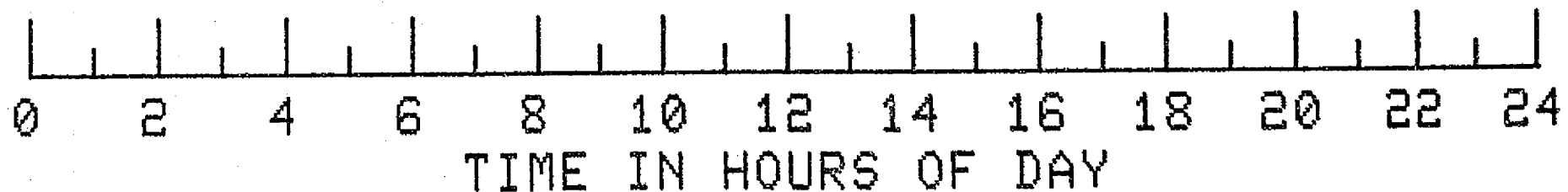
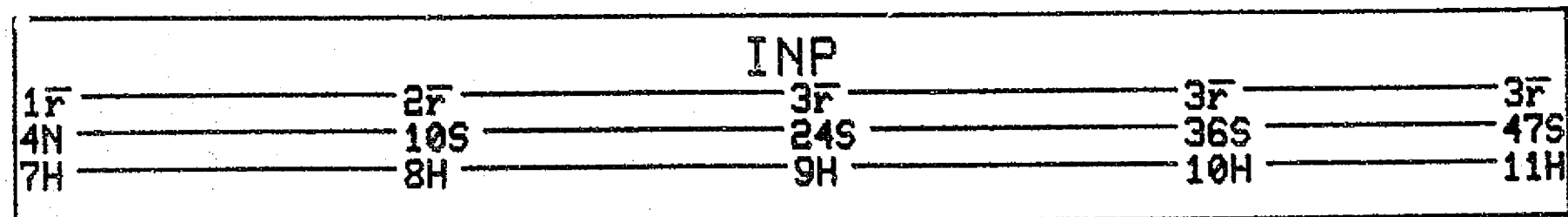
IMP-J



IMP-H

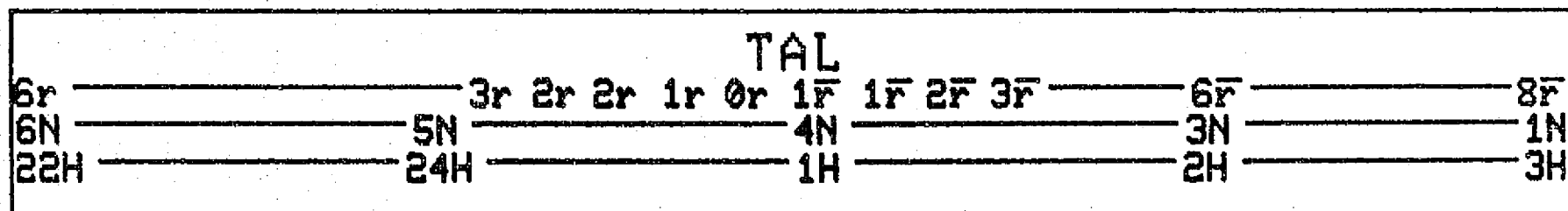


VELA
-5B

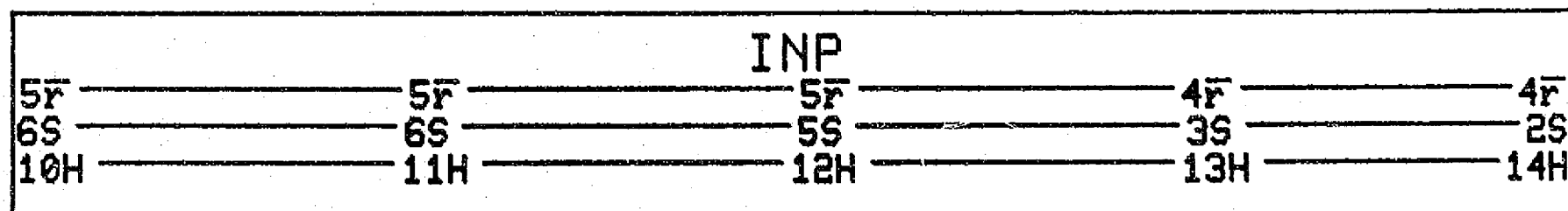


DAY 86 1977

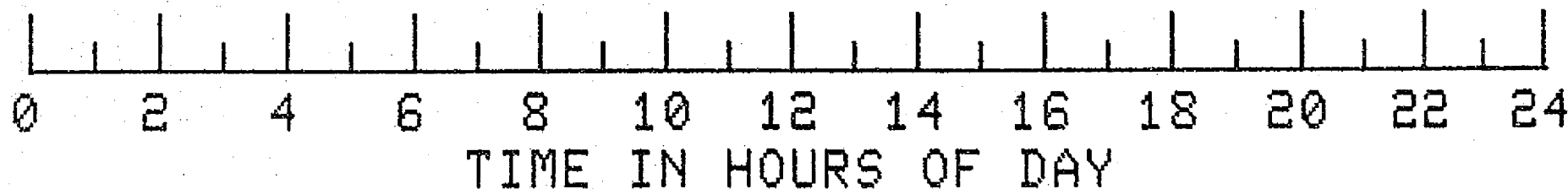
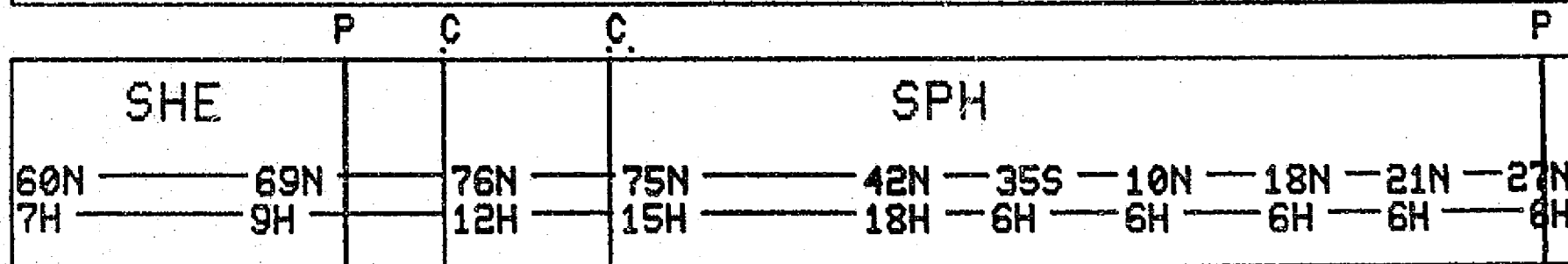
SOL
RAD
-11A



SOL
RAD
-11B

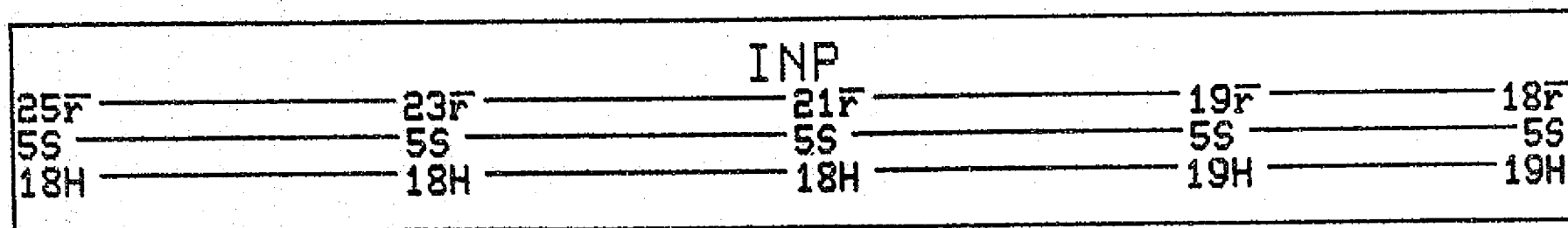


HAWK
EYE-1

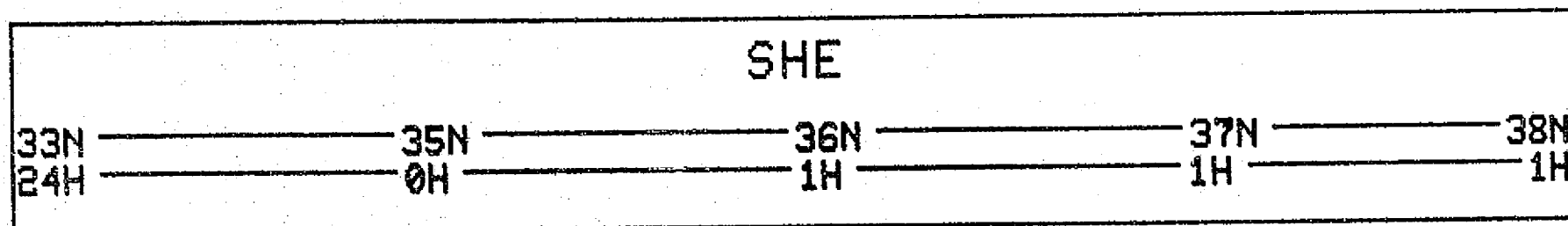


DAY 87 1977

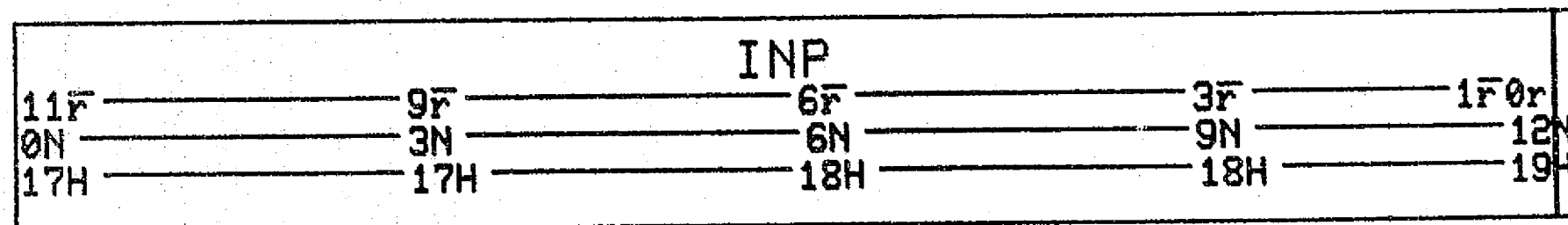
MOON



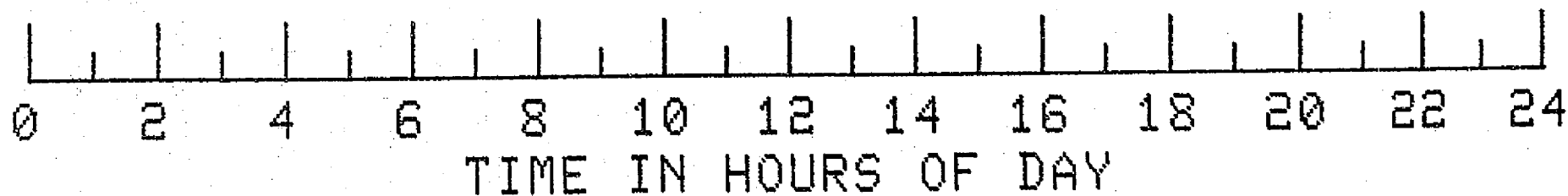
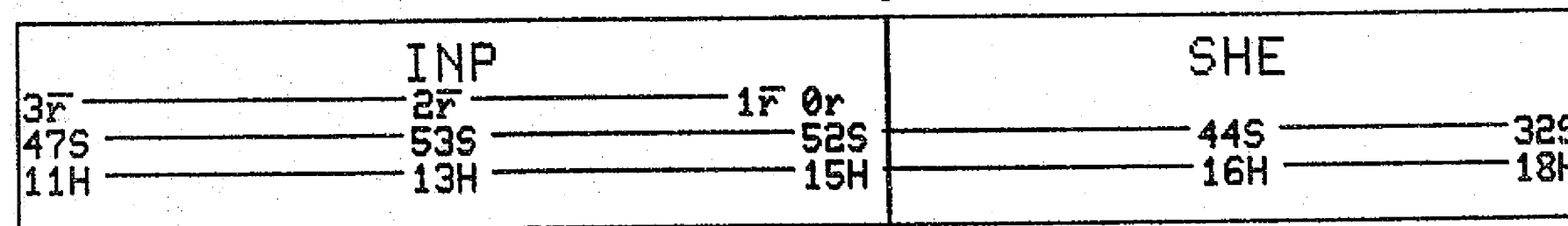
IMP-J



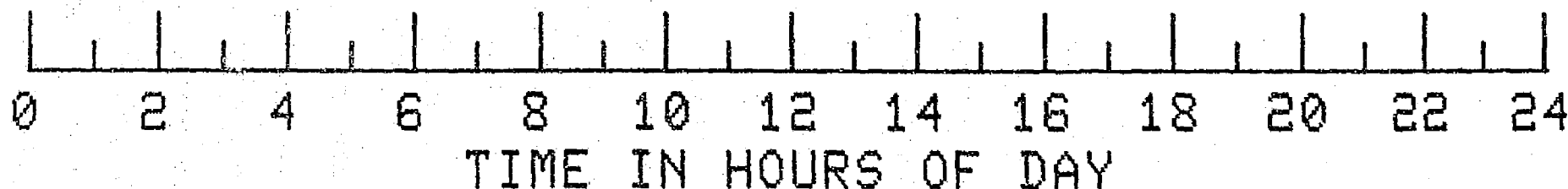
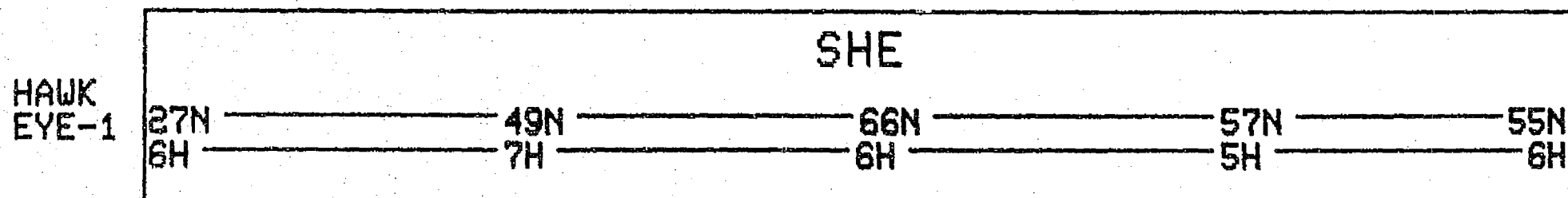
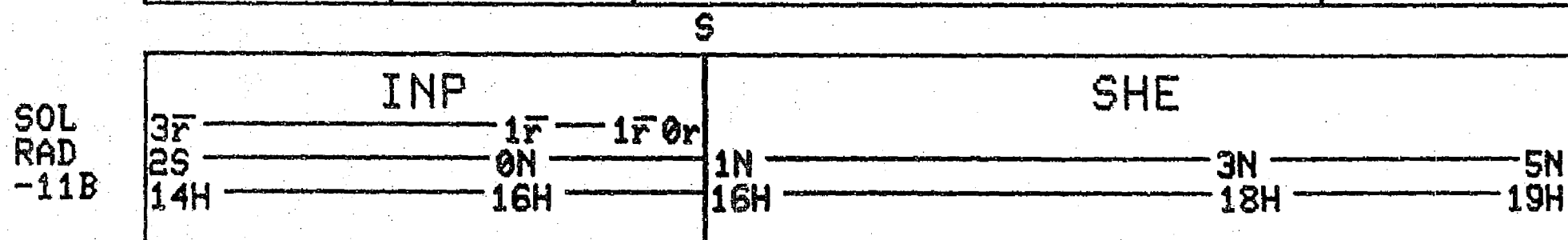
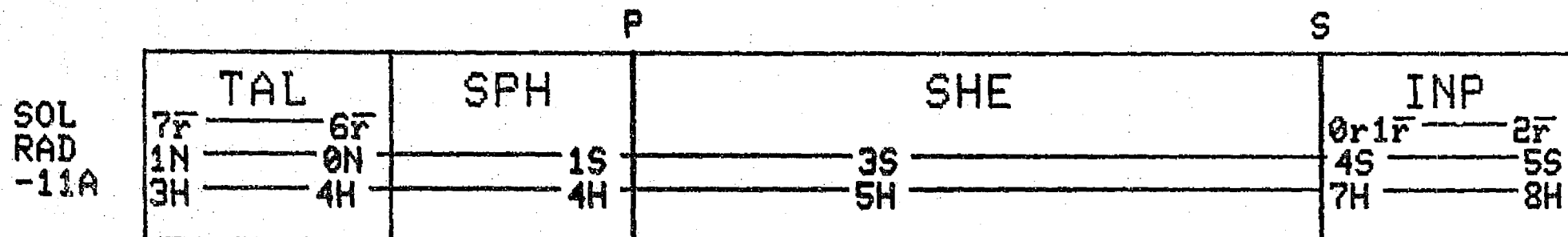
IMP-H



VELA
-5B

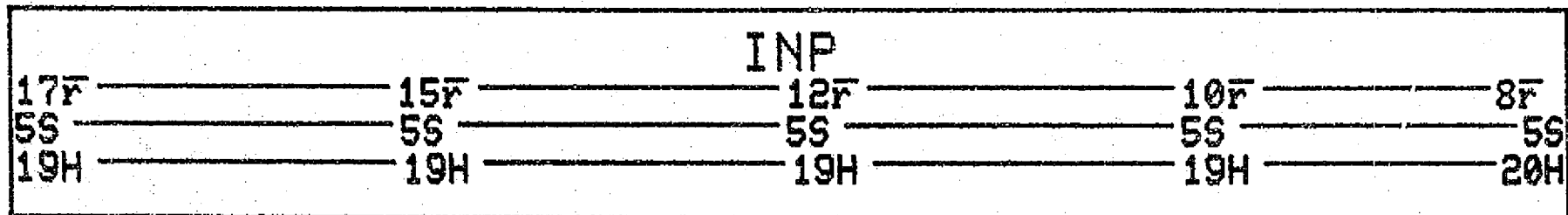


DAY 87 1977

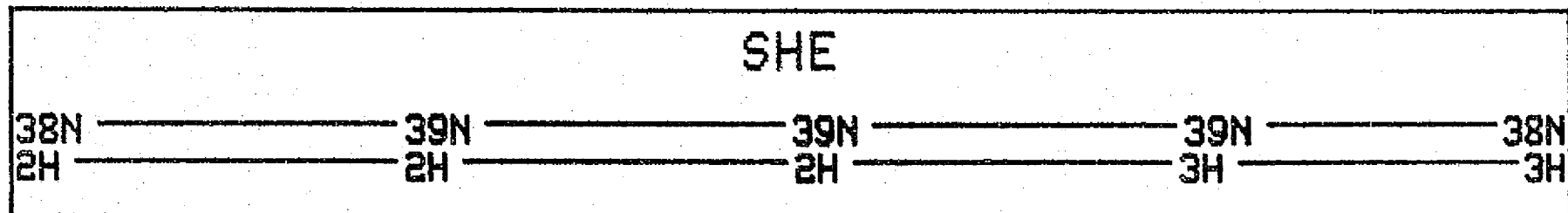


DAY 88 1977

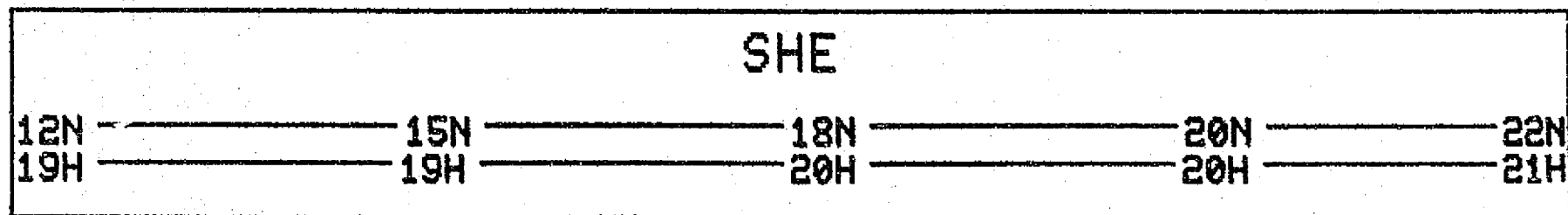
MOON



IMP-J

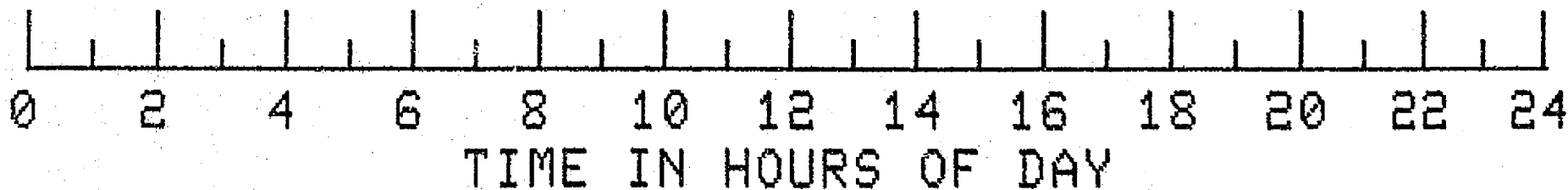
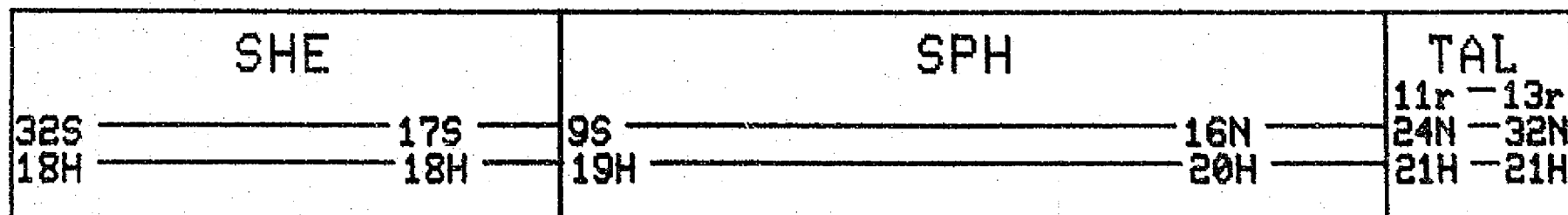


IMP-H



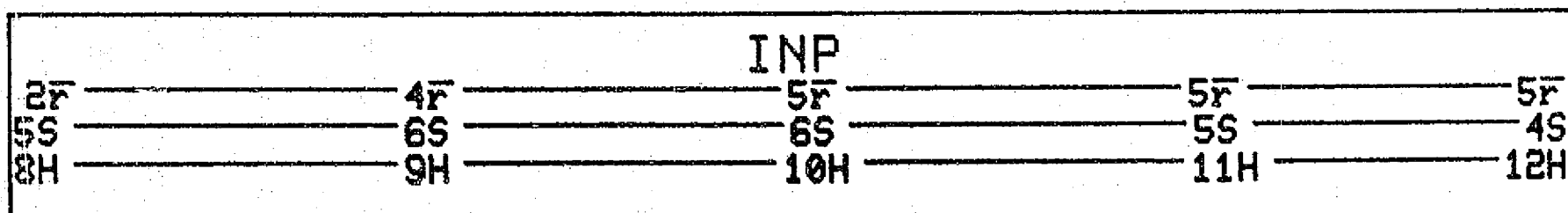
P

VELA
-58



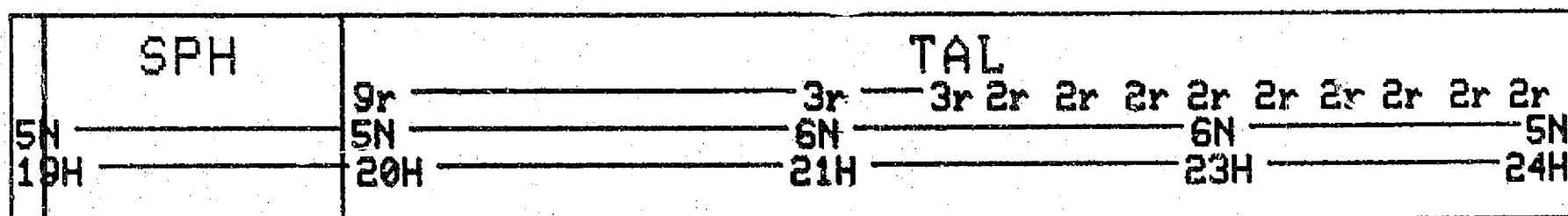
DAY 88 1977

SOL
RAD
-11A



P

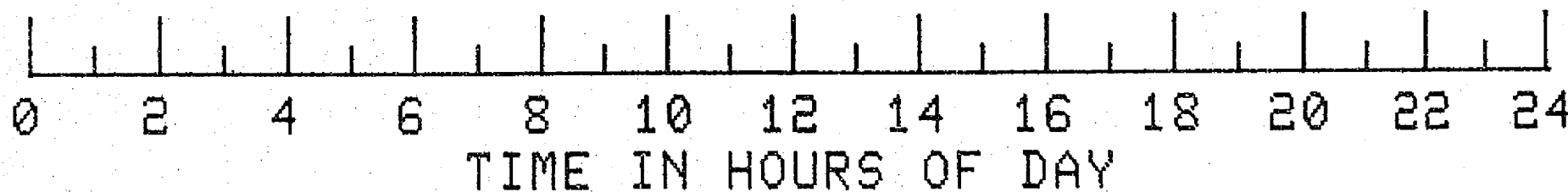
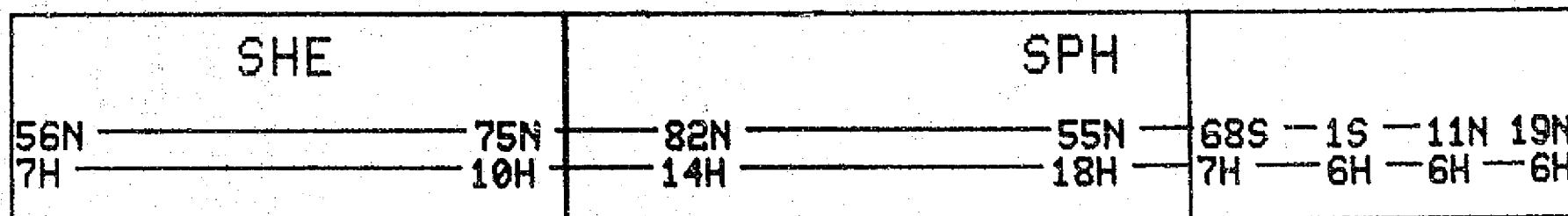
SOL
RAD
-11B



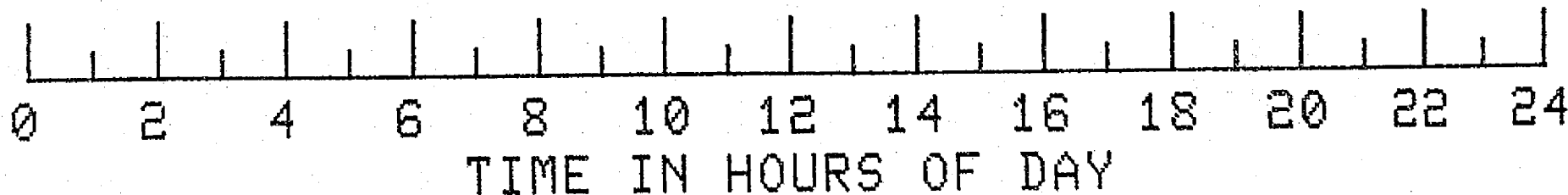
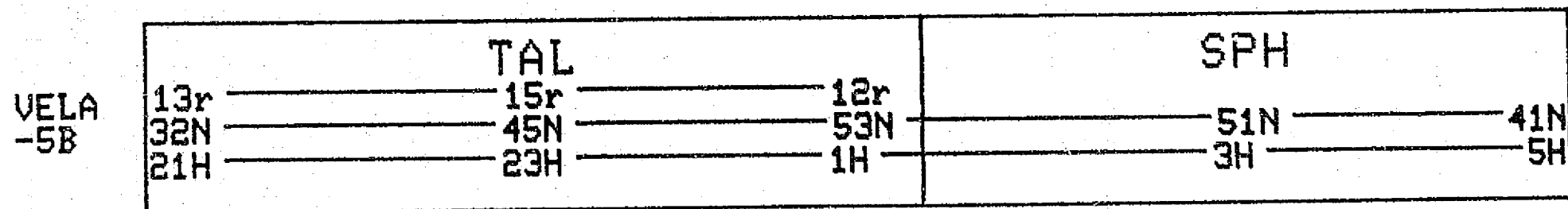
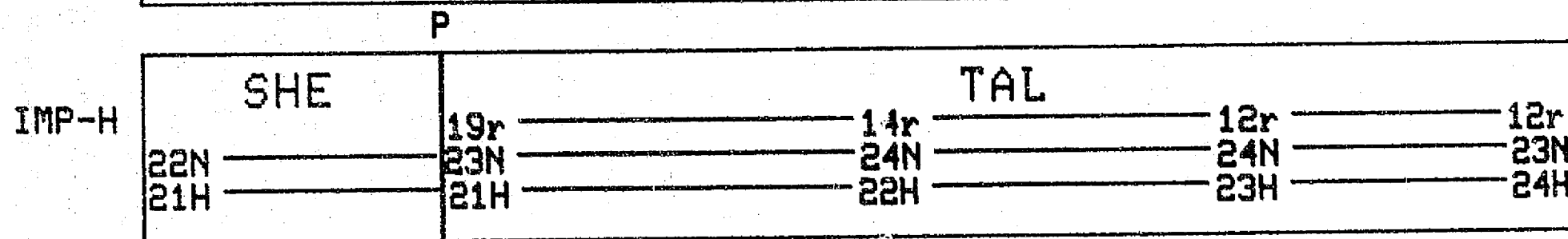
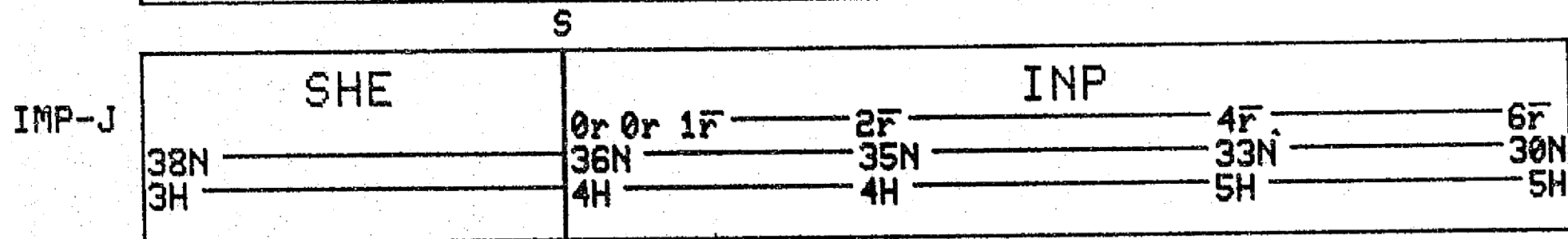
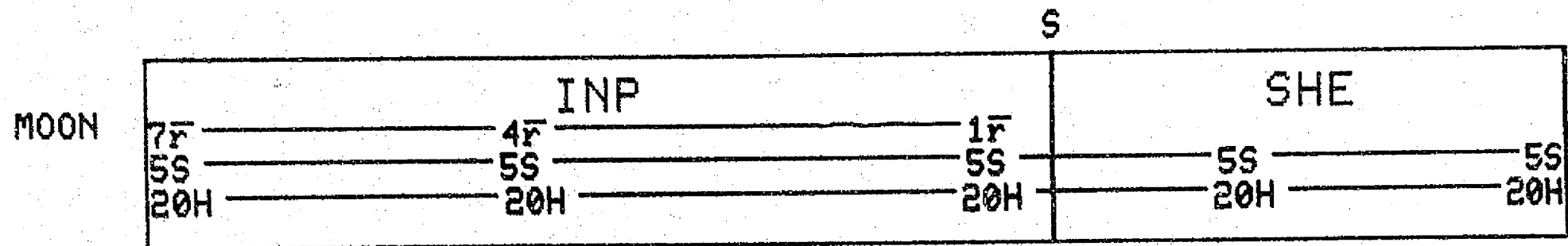
PC

C

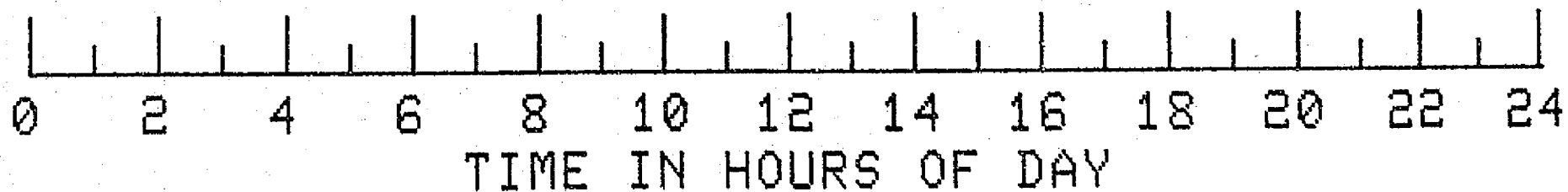
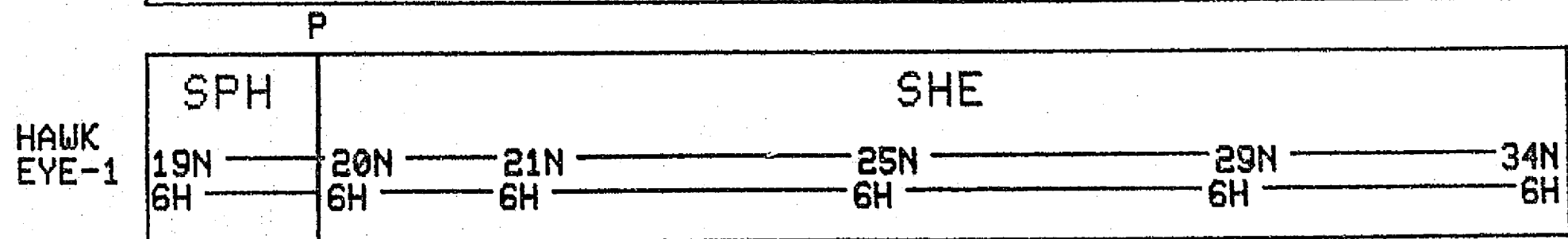
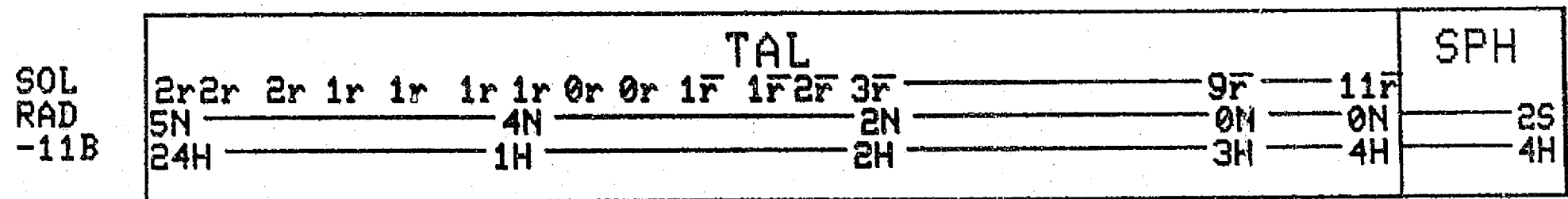
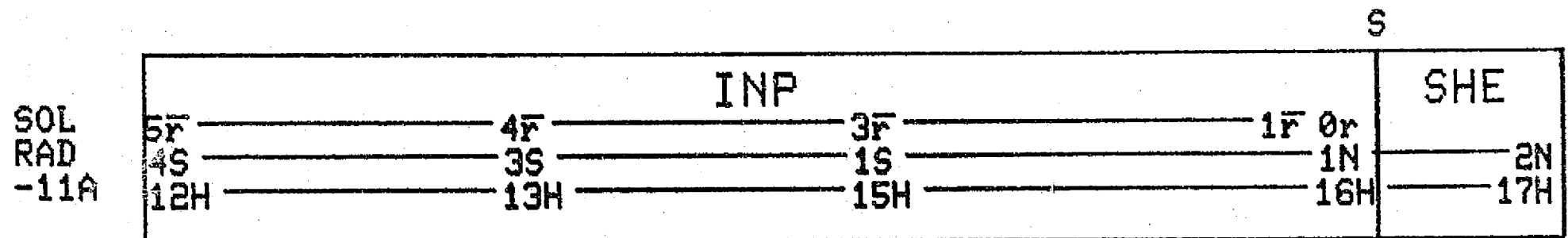
HAWK
EYE-1



DAY 89 1977

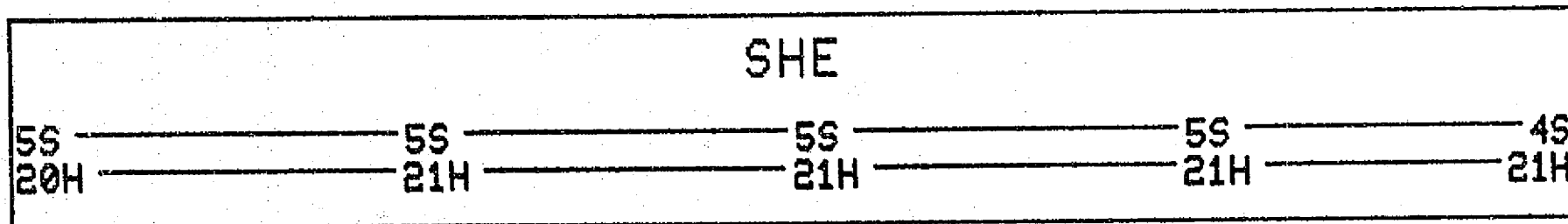


DAY 89 1977

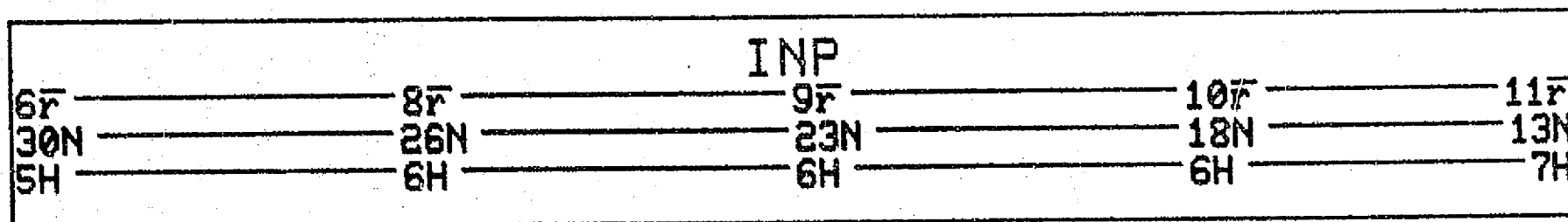


DAY 90 1977

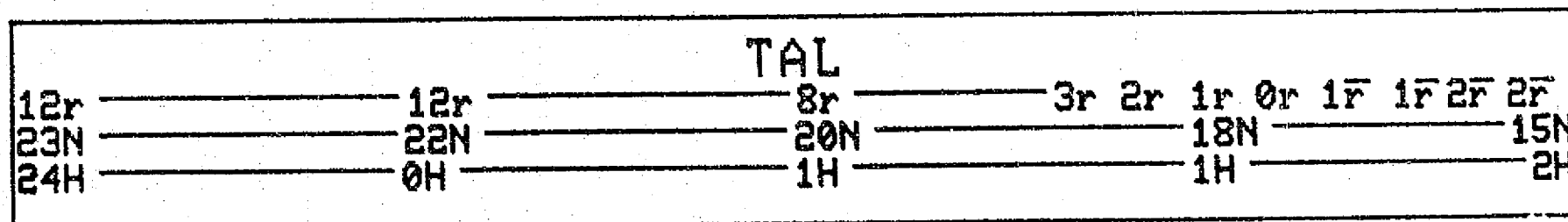
MOON



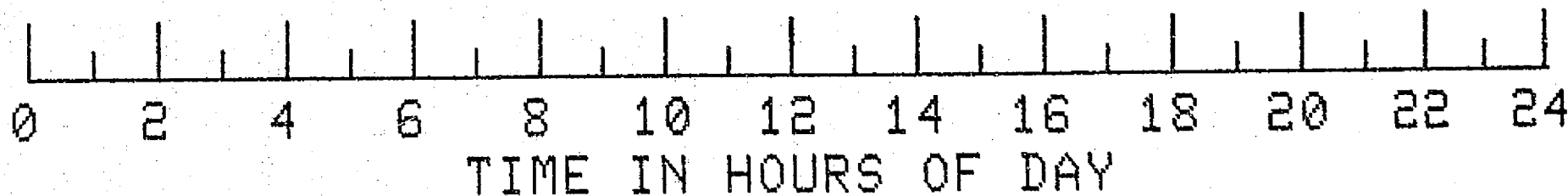
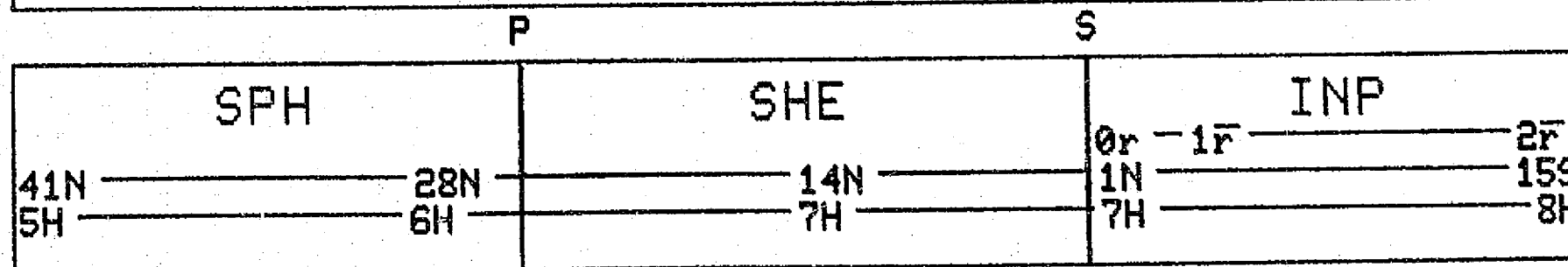
IMP-J



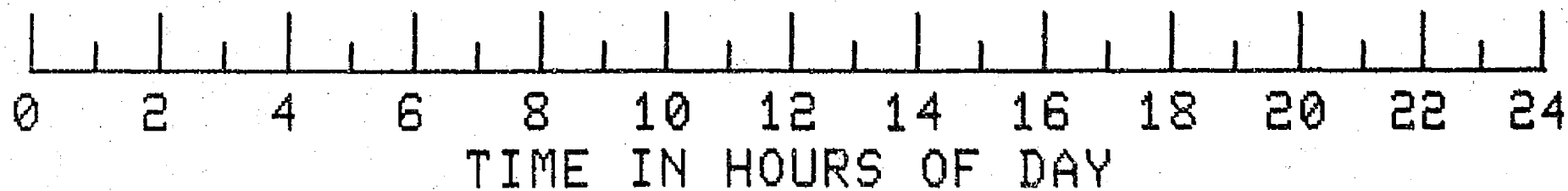
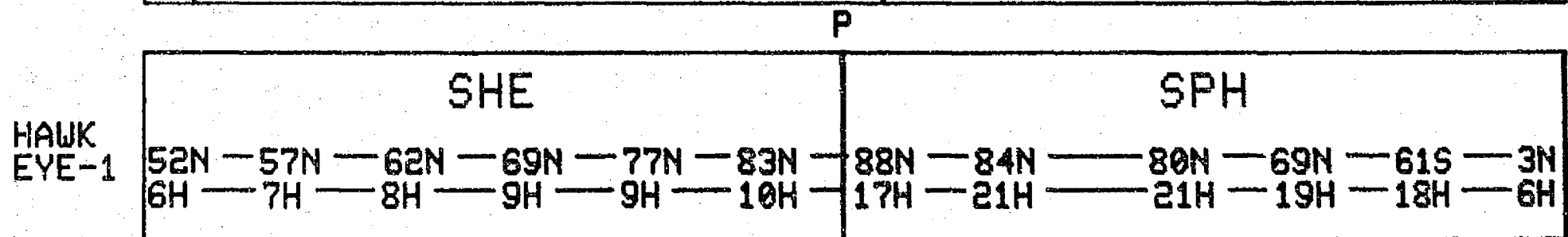
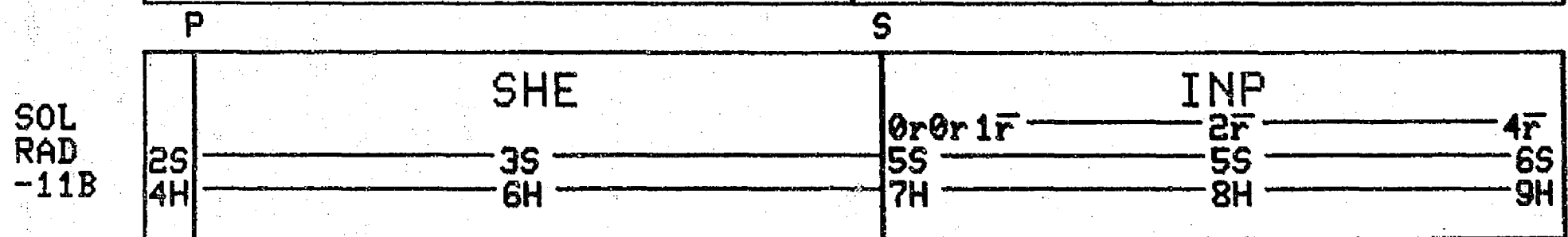
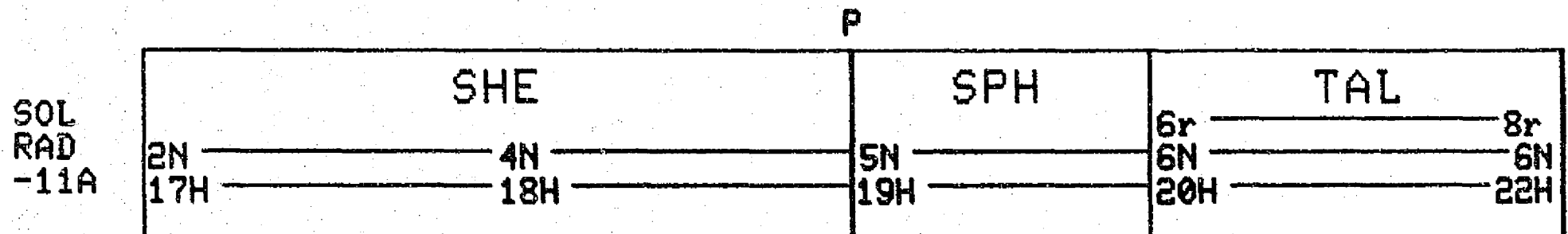
IMP-H



VELA
-5B

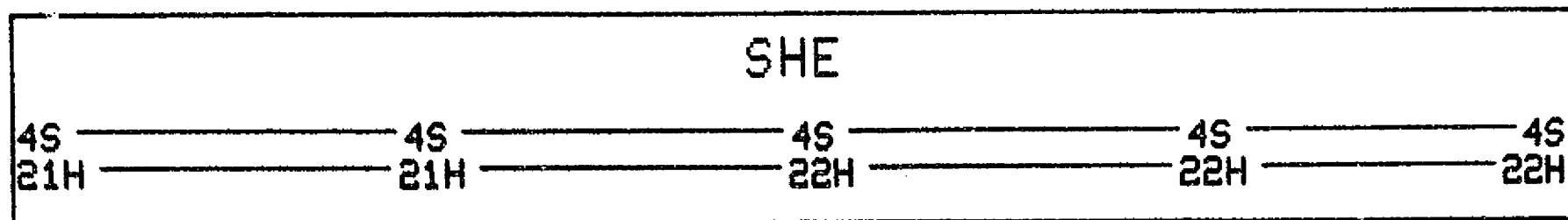


DAY 90 1977

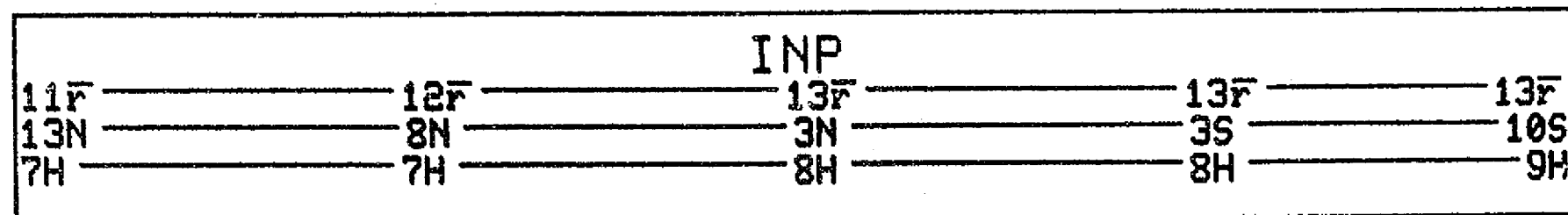


DAY 91 1977

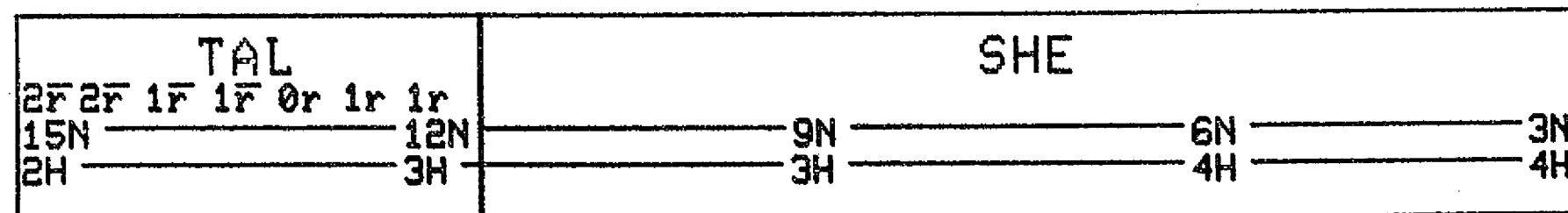
MOON



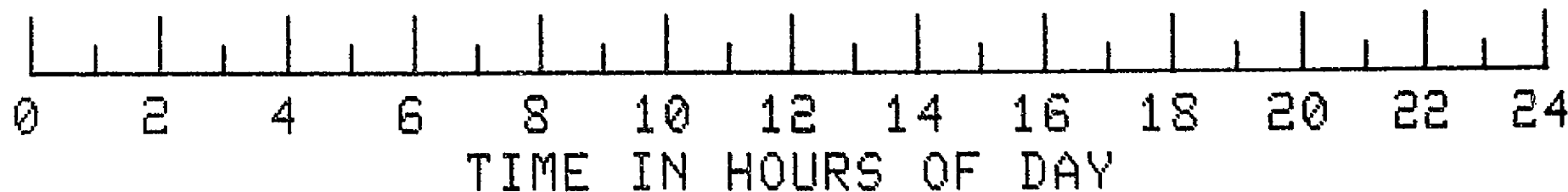
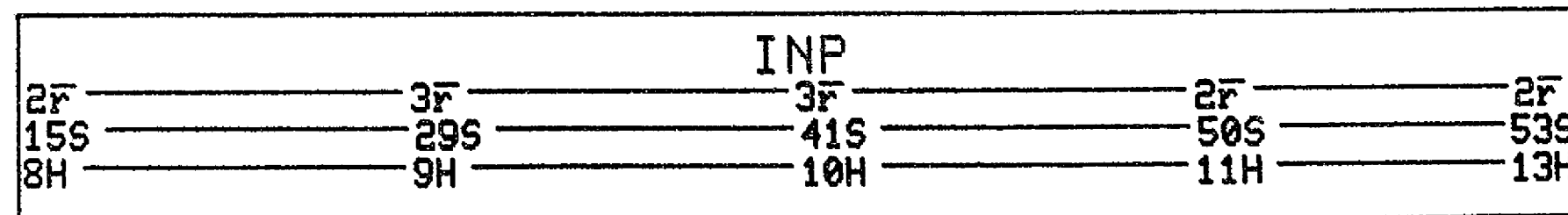
IMP-J



IMP-H

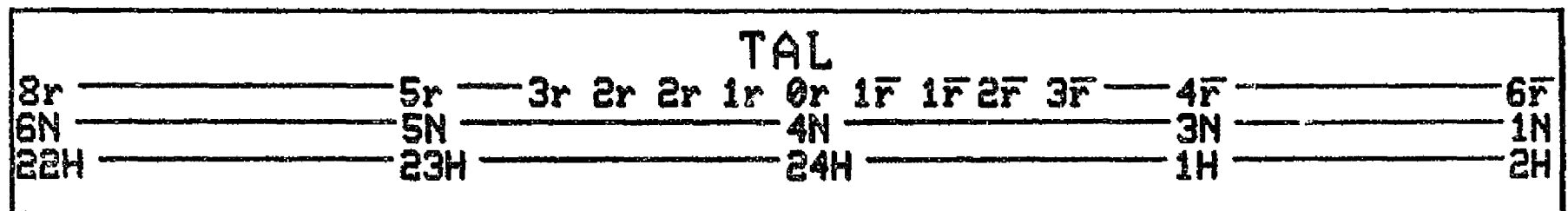


VELA
-5B

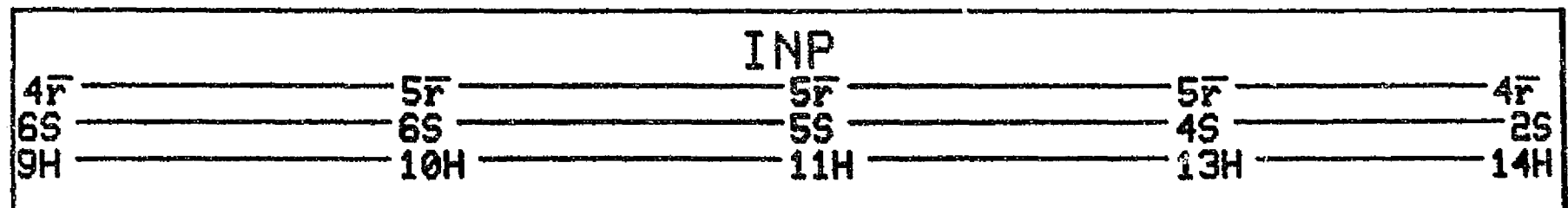


DAY 91 1977

SOL
RAD
-11A

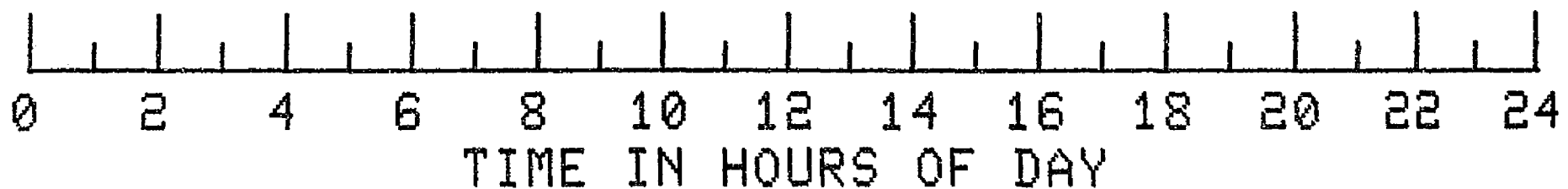
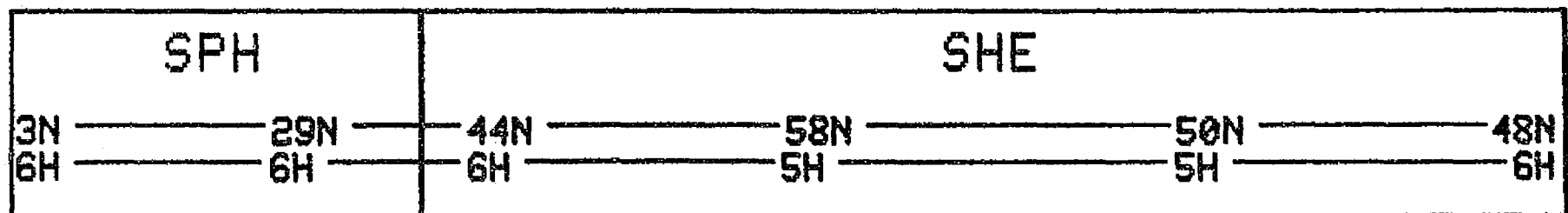


SOL
RAD
-11B



P

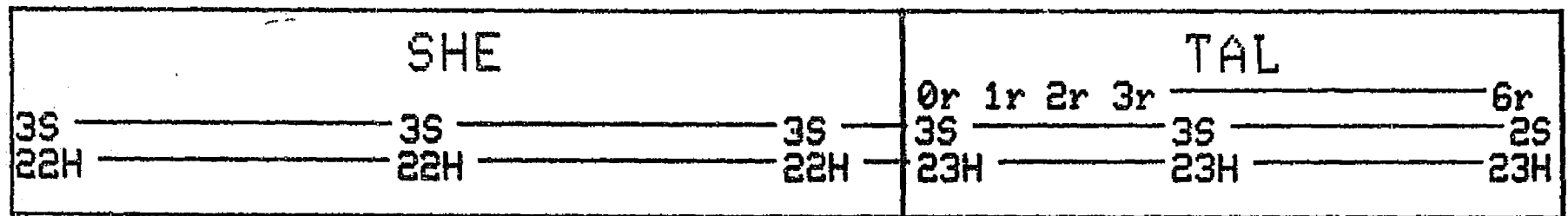
HAWK
EYE-1



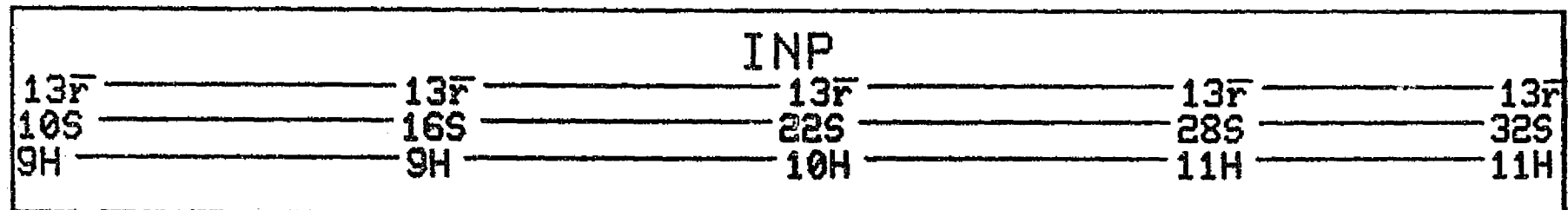
DAY 92 1977

P

MOON

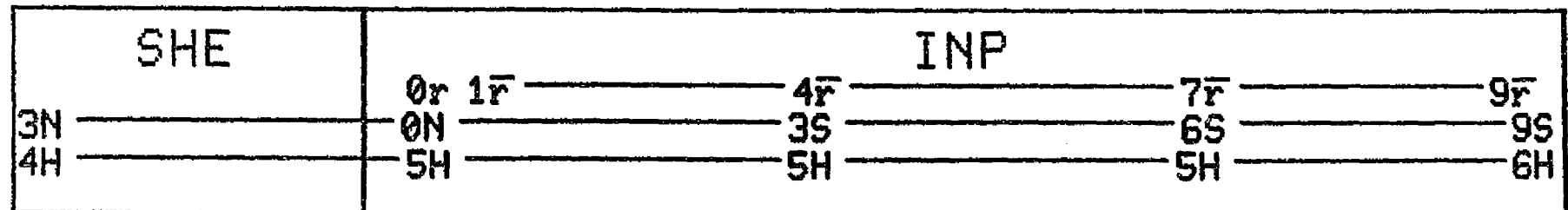


IMP-J



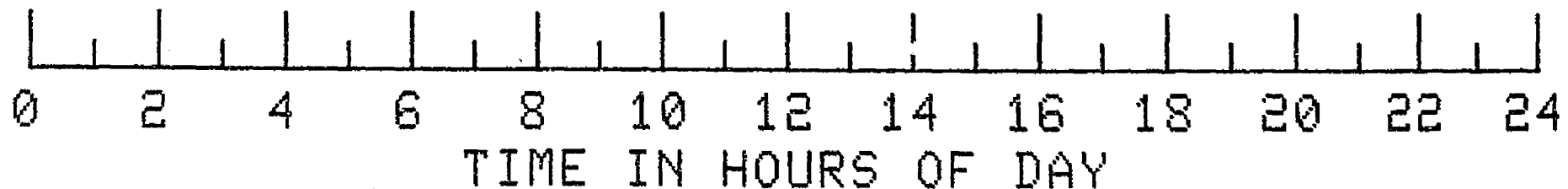
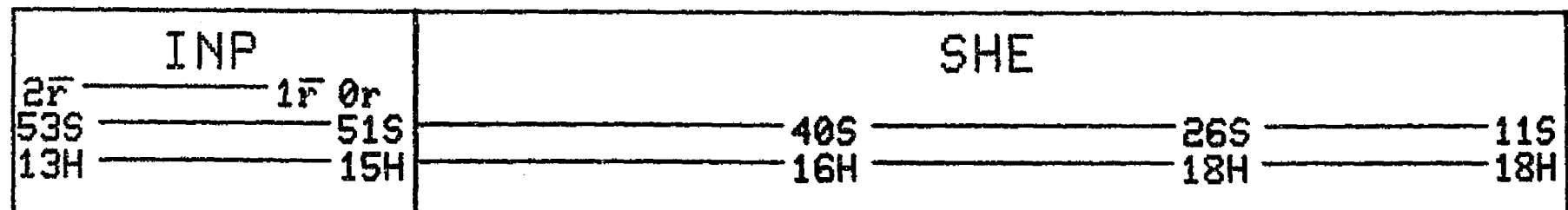
S

IMP-H

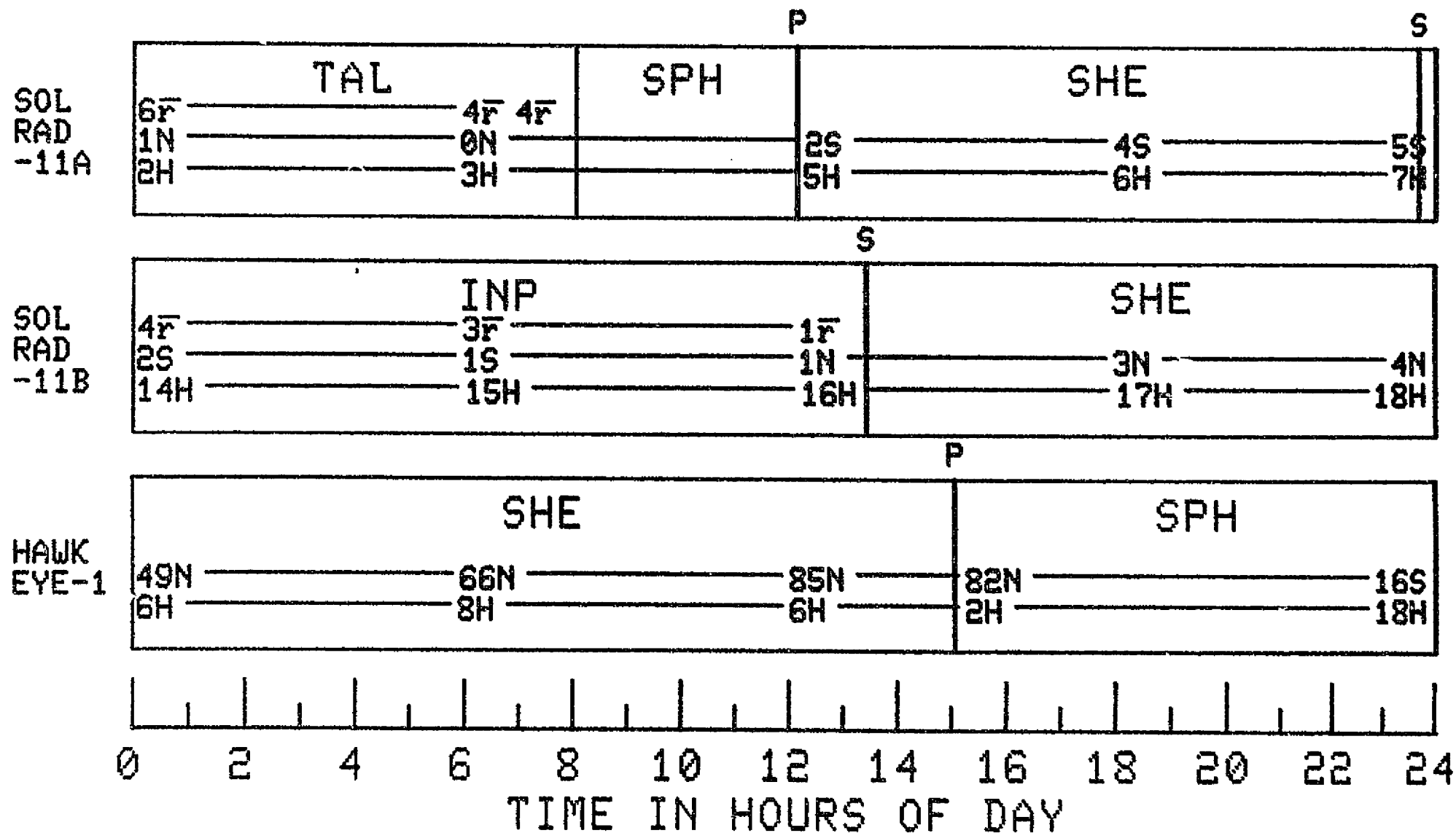


S

VELA
-5B

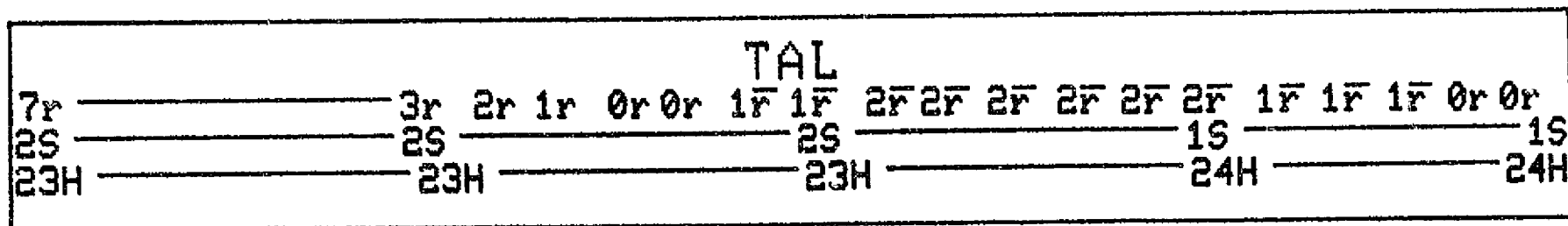


DAY 92 1977

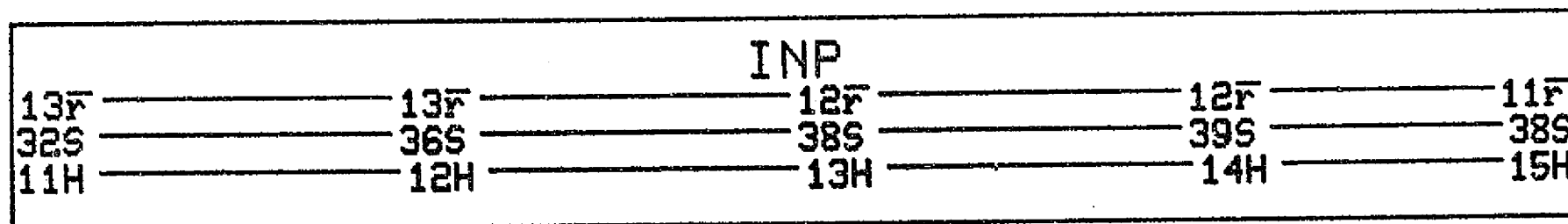


DAY 93 1977

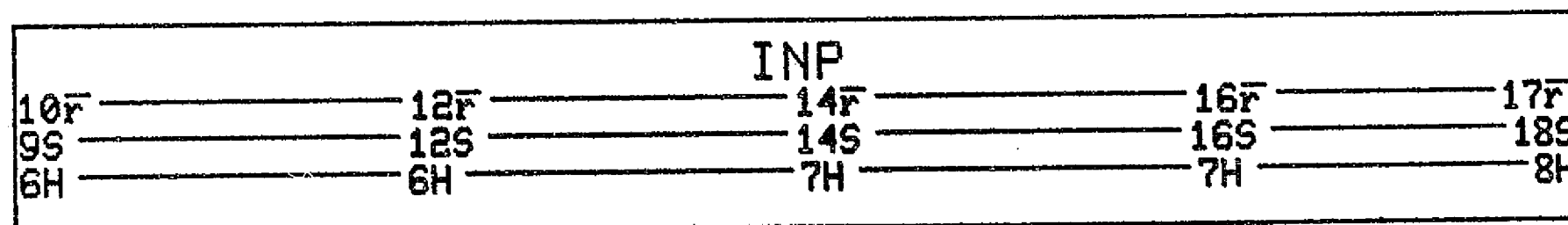
MOON



IMP-J

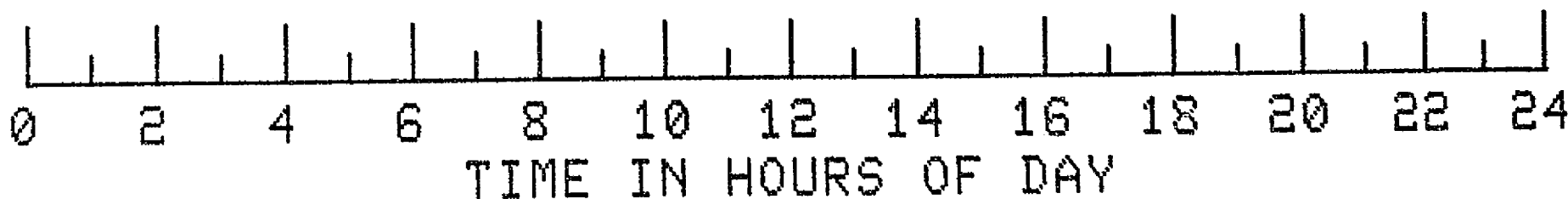
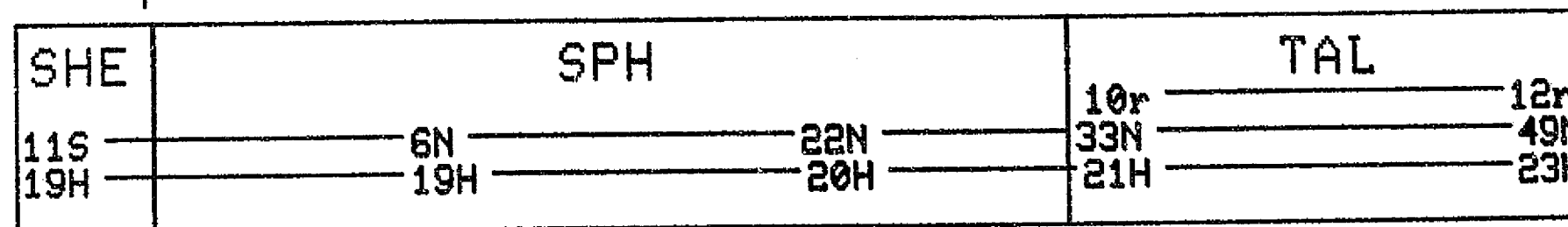


IMP-H



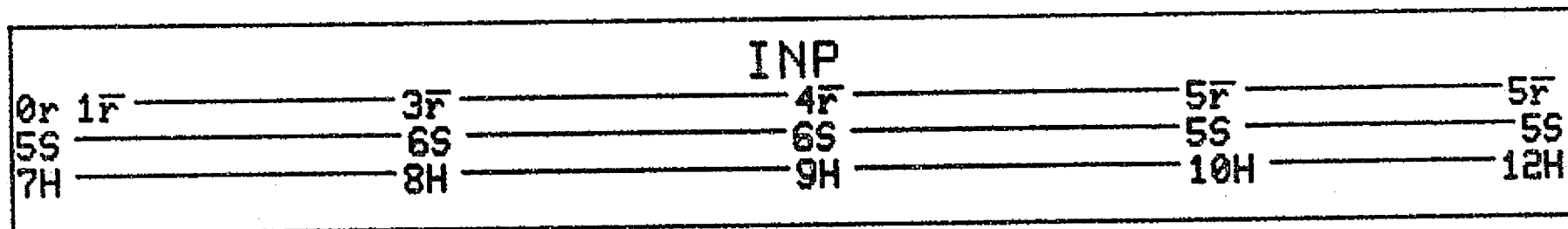
P

VELA
-5B



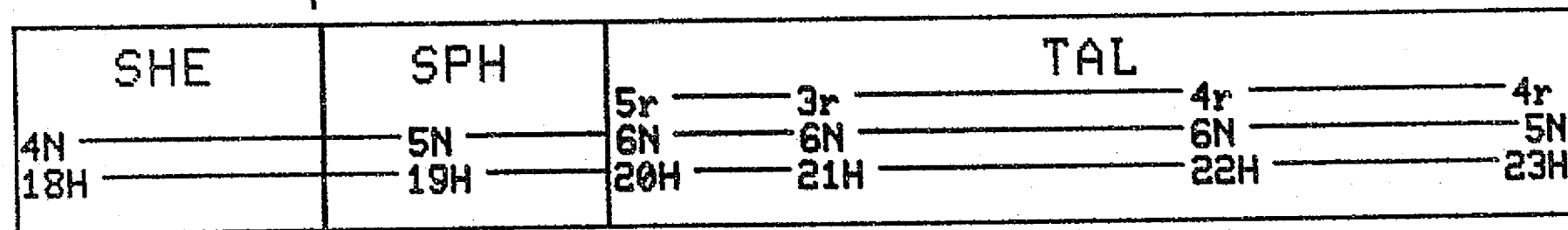
DAY 93 1977

SOL
RAD
-11A



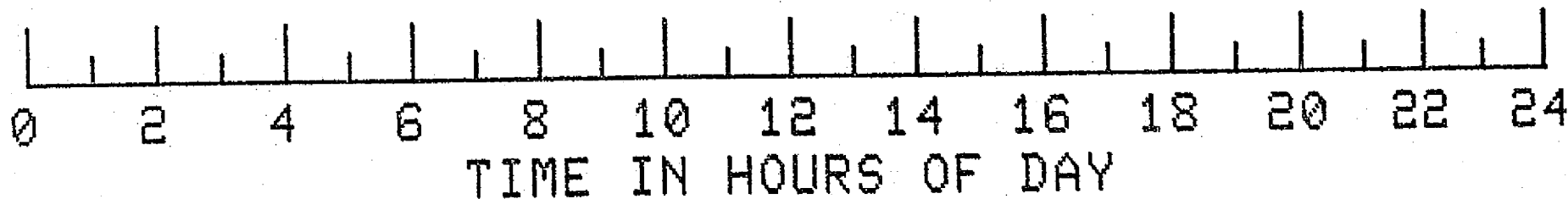
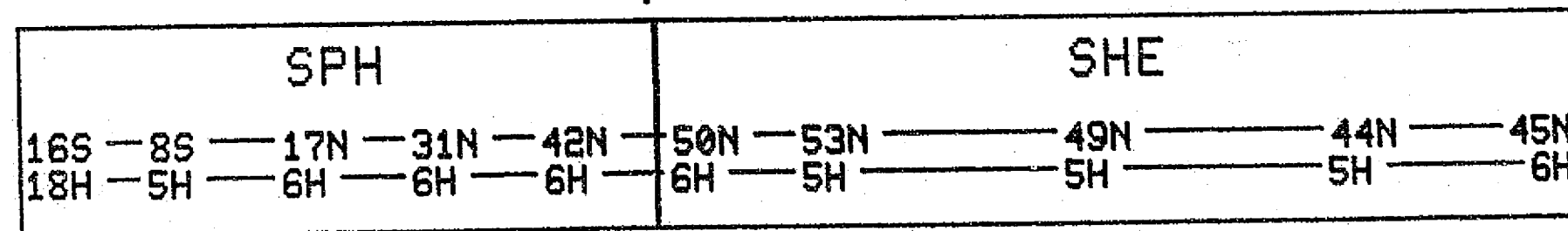
P

SOL
RAD
-11B



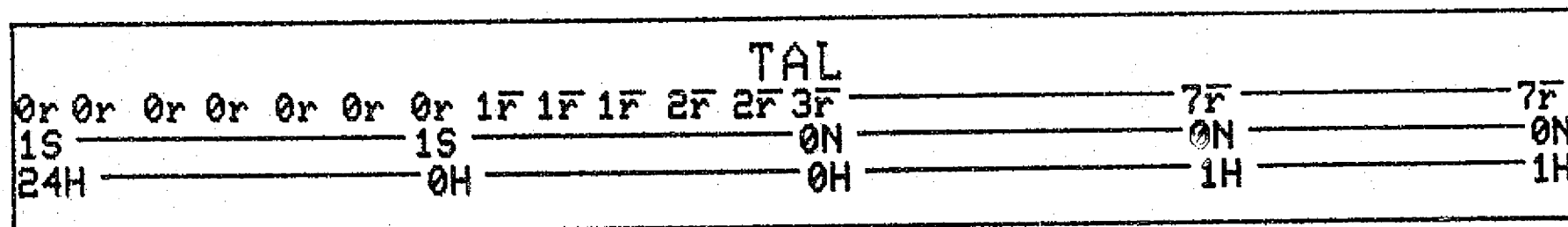
P

HAWK
EYE-1

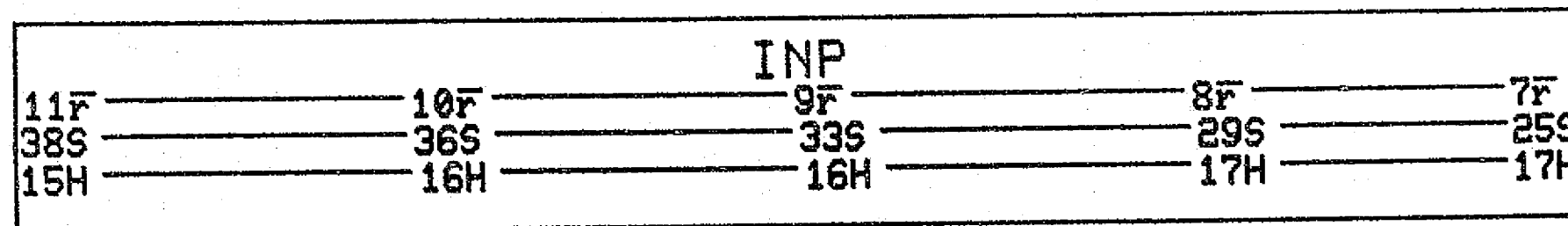


DAY 94 1977

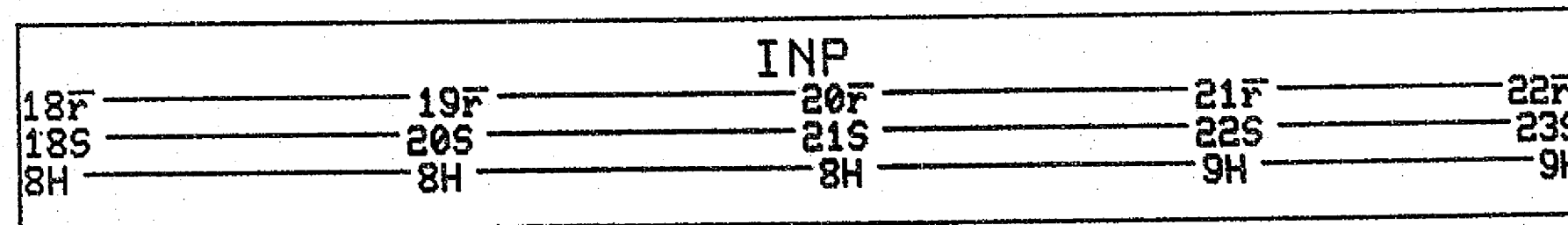
MOON



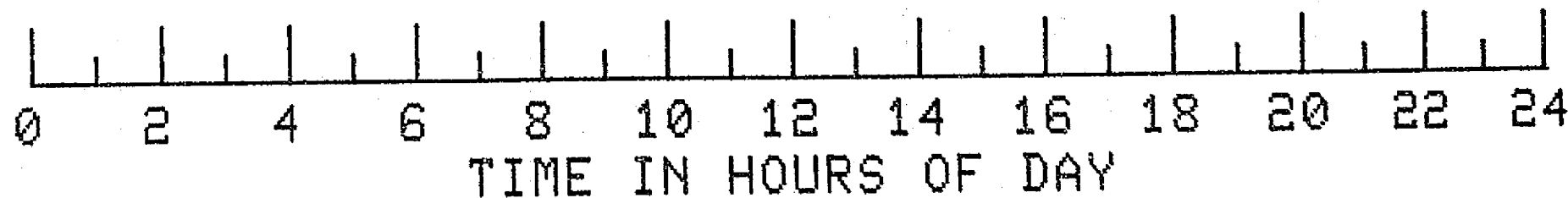
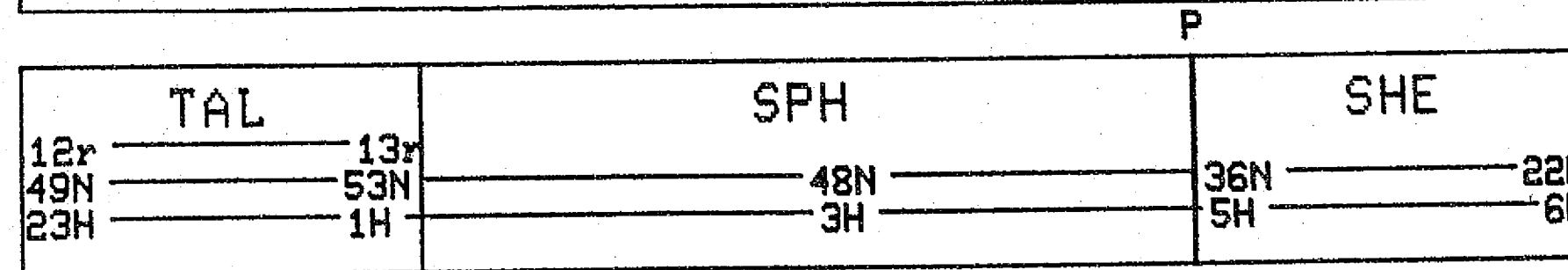
IMP-J



IMP-H

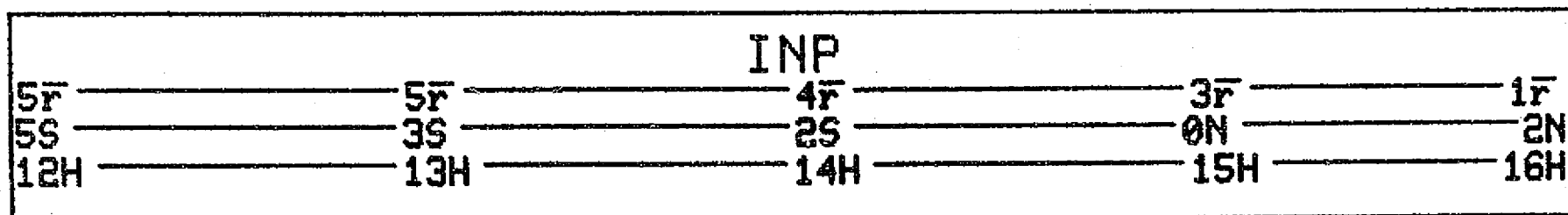


VELA
-5B

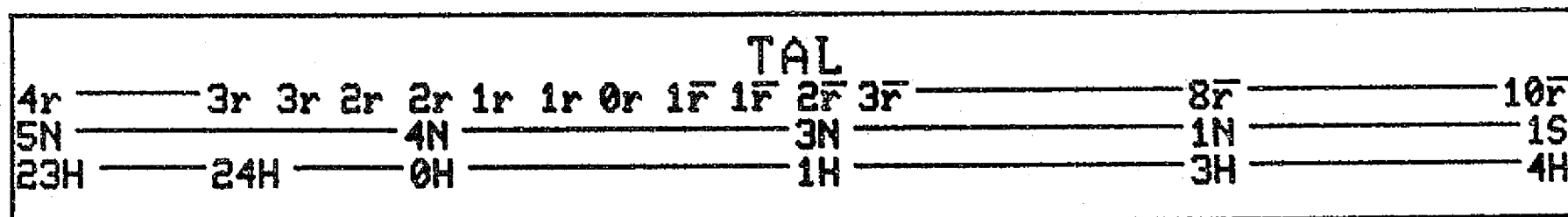


DAY 94 1977

SOL
RAD
-11A

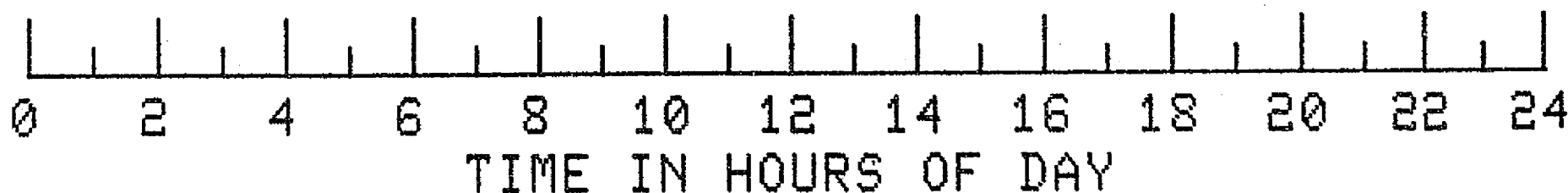
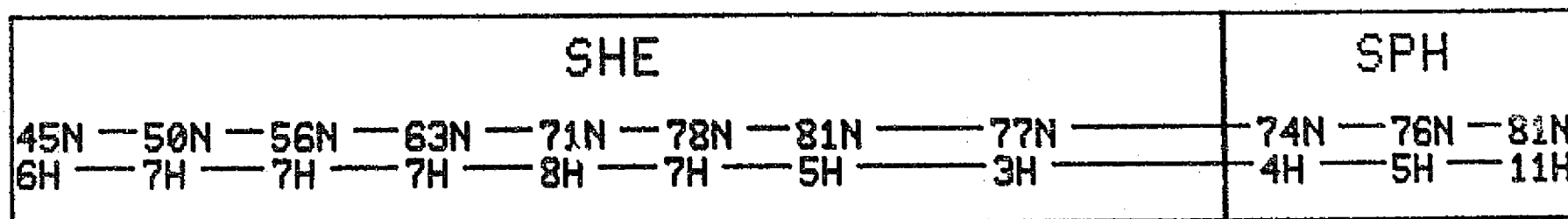


SOL
RAD
-11B

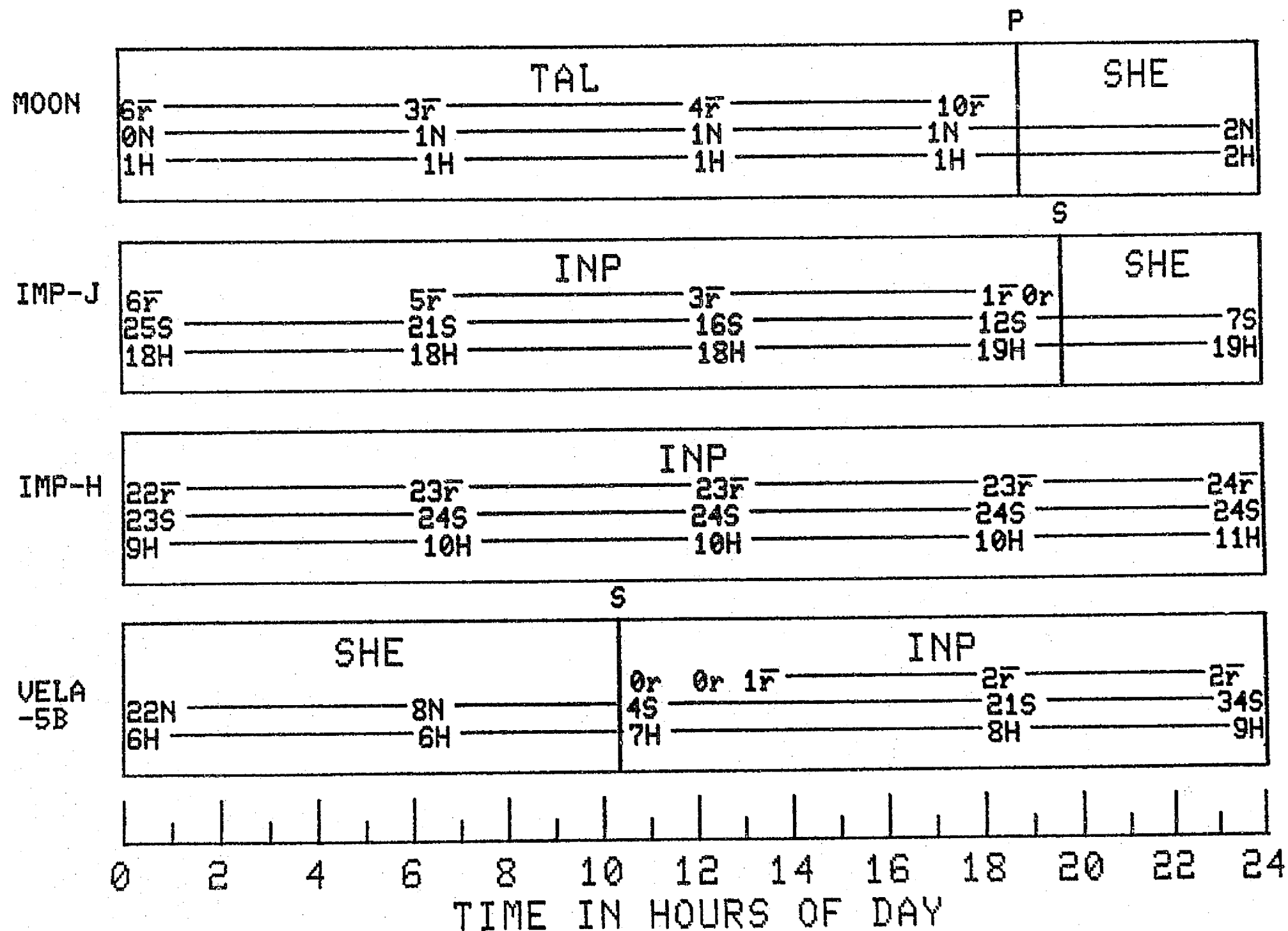


P

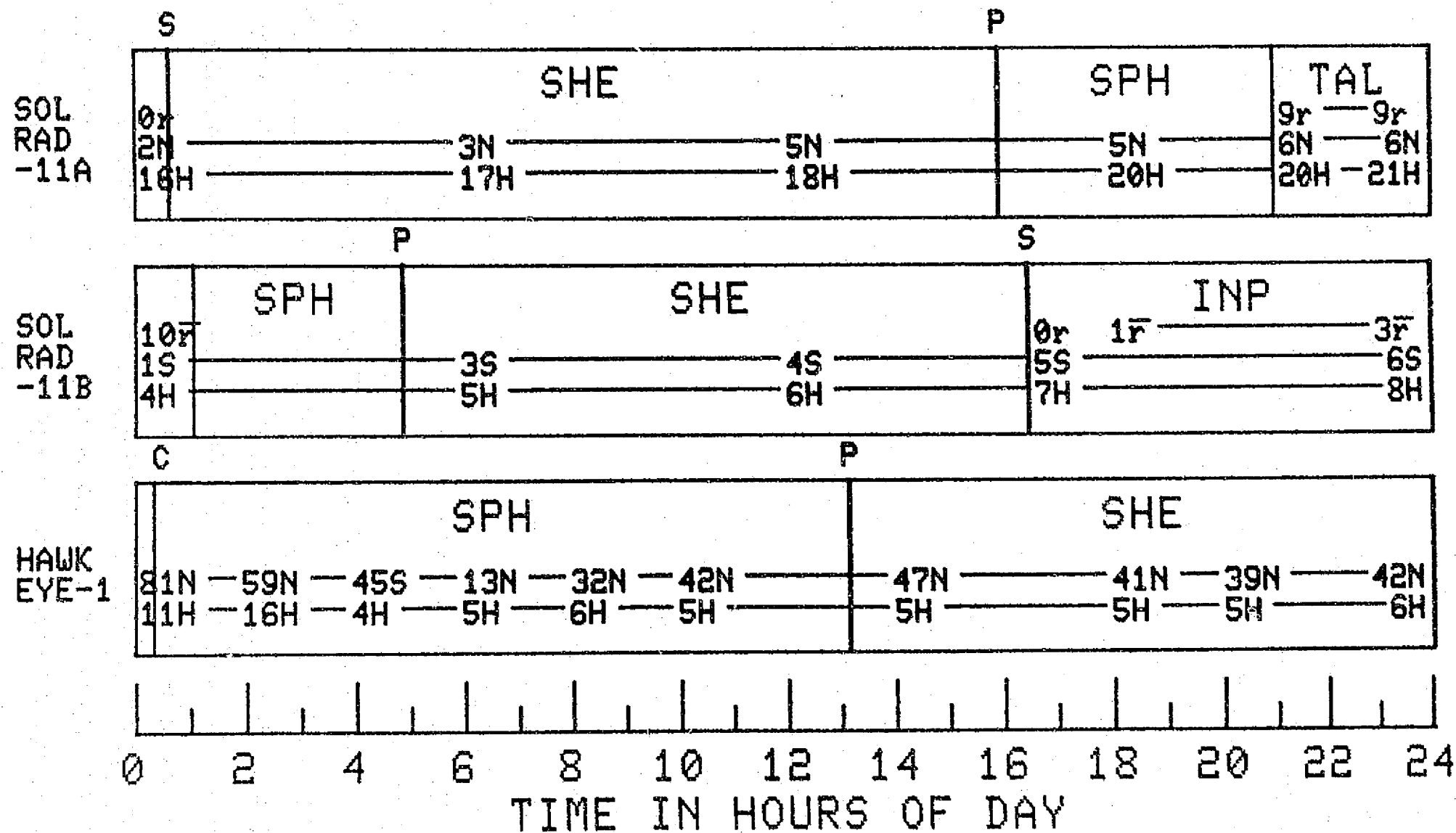
HAUK
EYE-1



DAY 95 1977

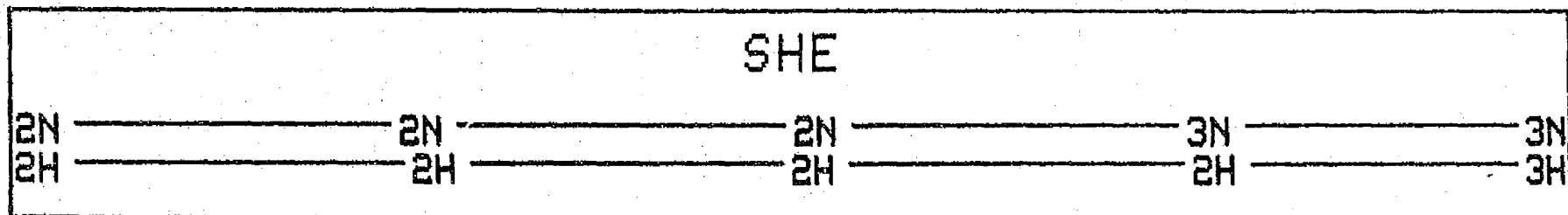


DAY 95 1977

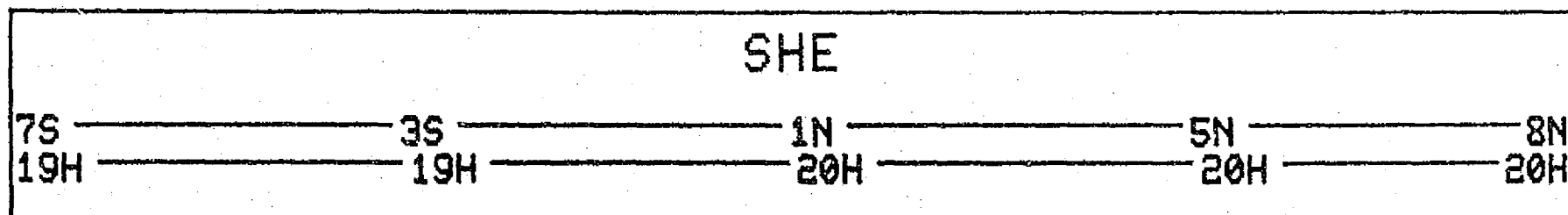


DAY 96 1977

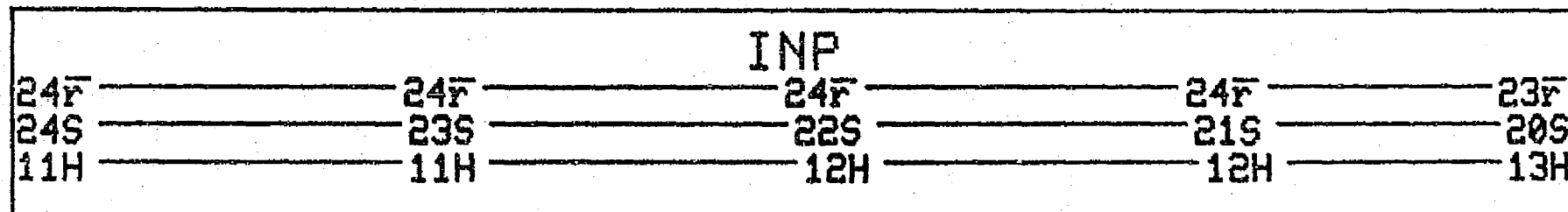
MOON



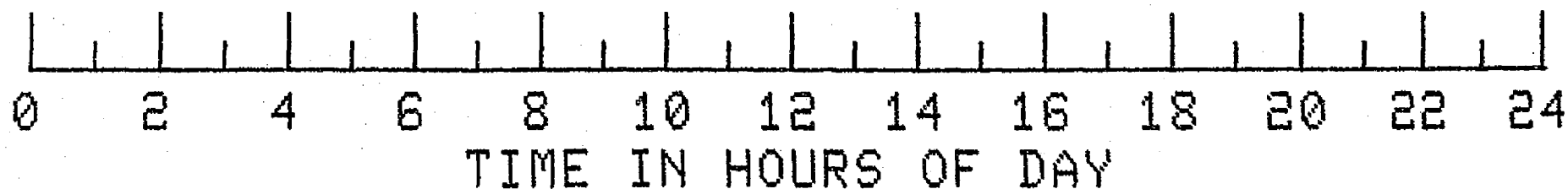
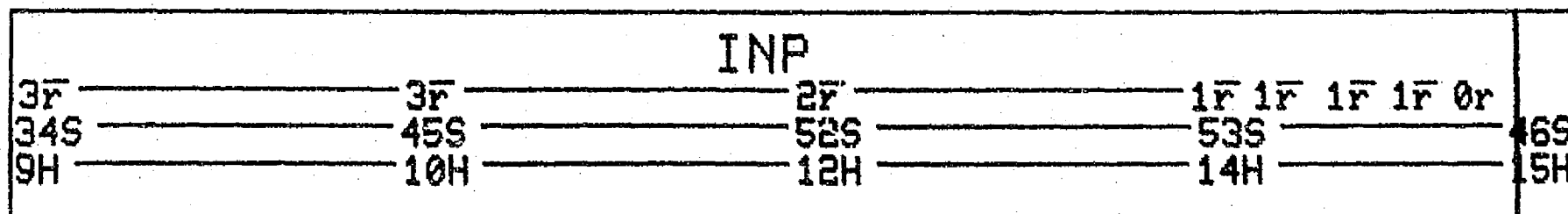
IMP-J



IMP-H

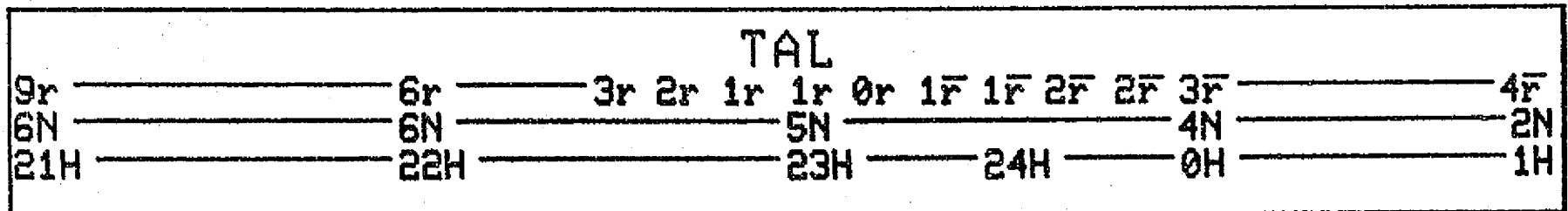


VELA
-5B

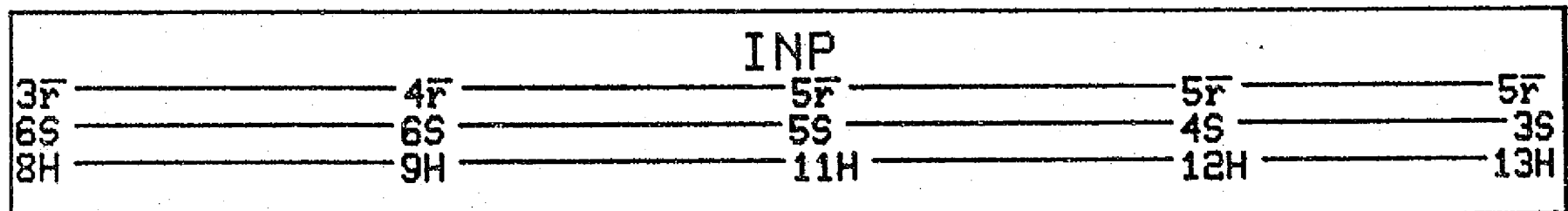


DAY 96 1977

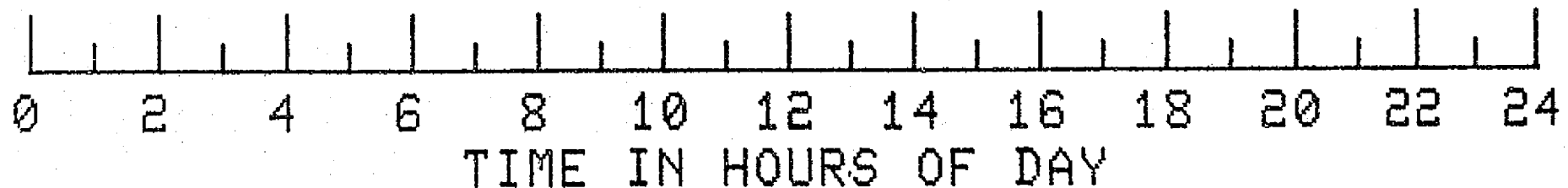
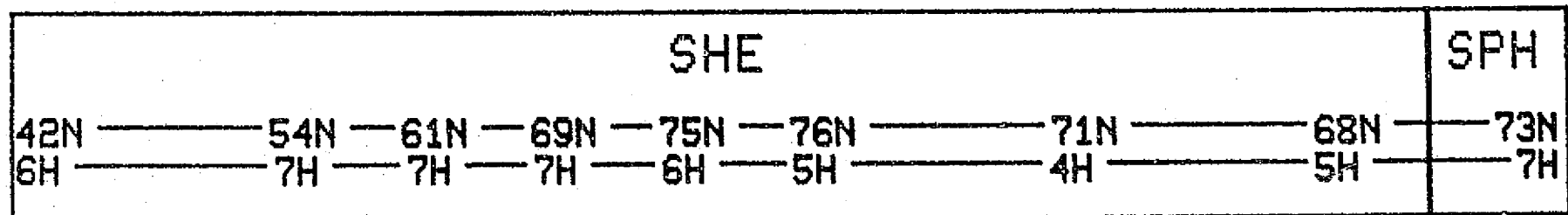
SOL
RAD
-11A



SOL
RAD
-11B



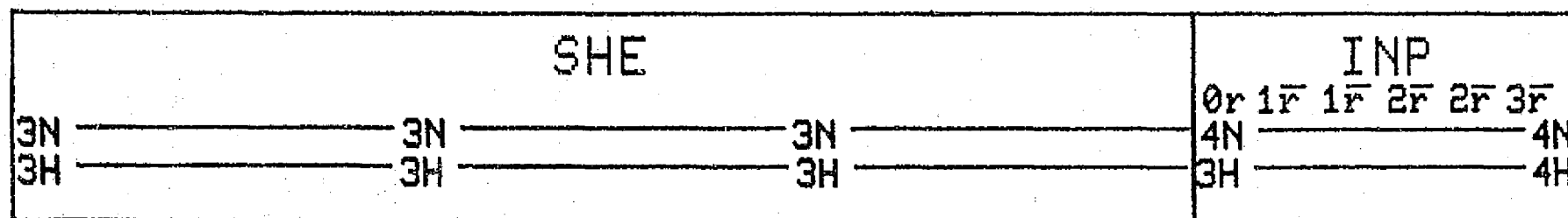
HAWK
EYE-1



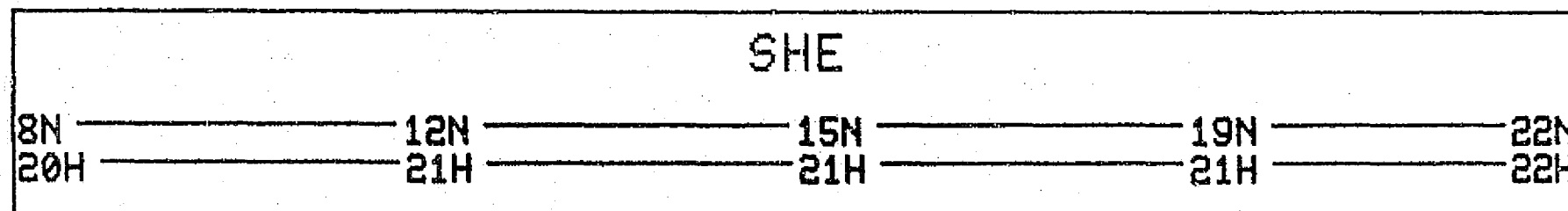
DAY 97 1977

S

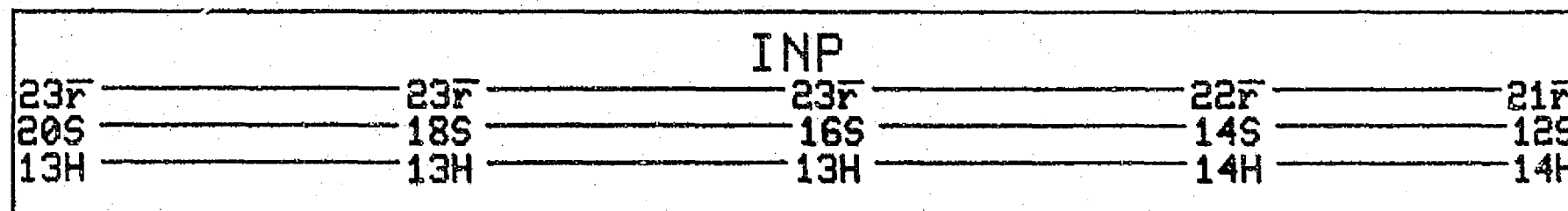
MOON



IMP-J

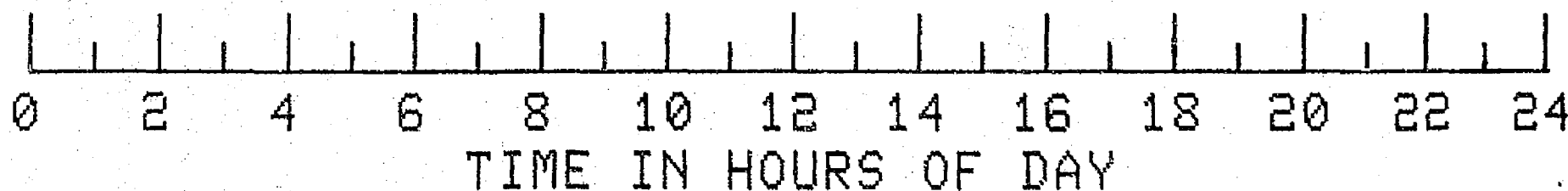
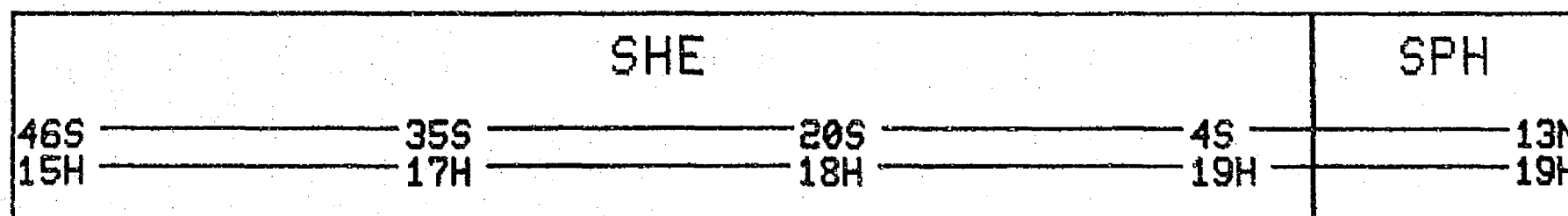


IMP-H



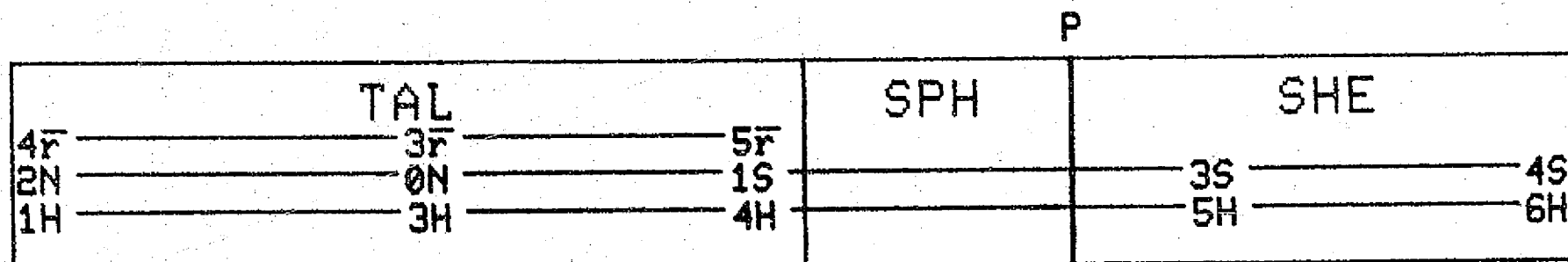
P

VELA
-5B

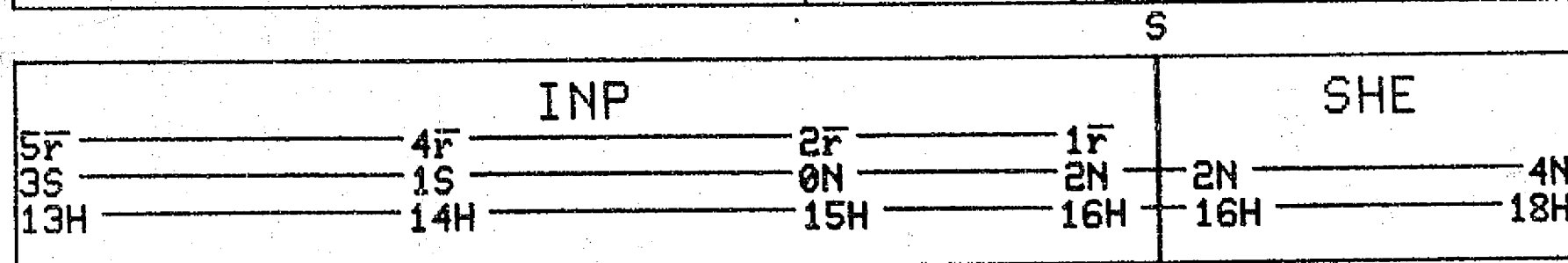


DAY 97 1977

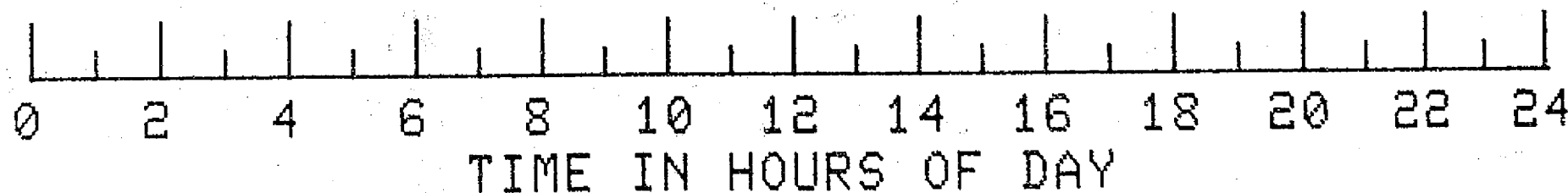
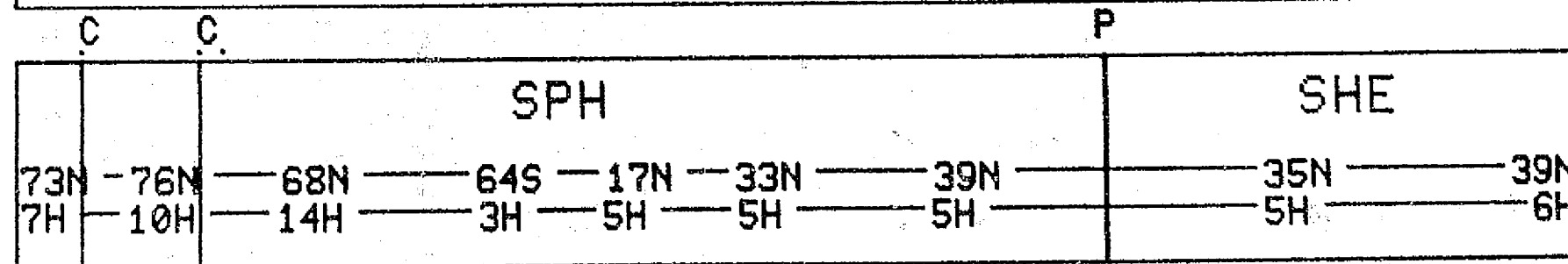
SOL
RAD
-11A



SOL
RAD
-11B

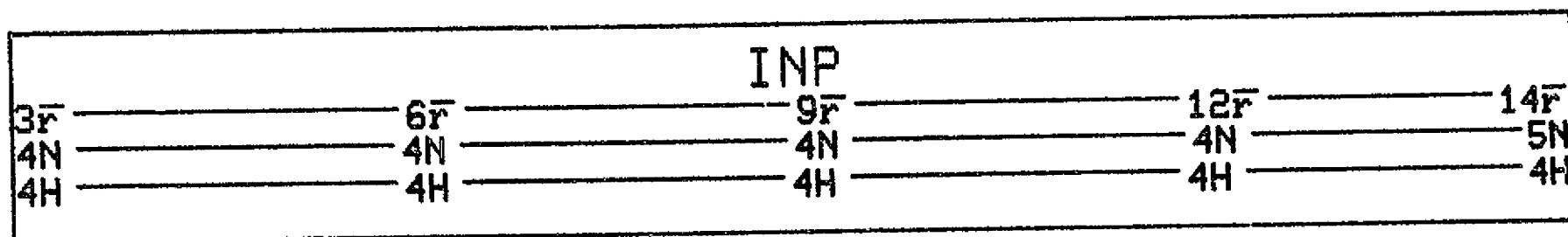


HAWK
EYE-1

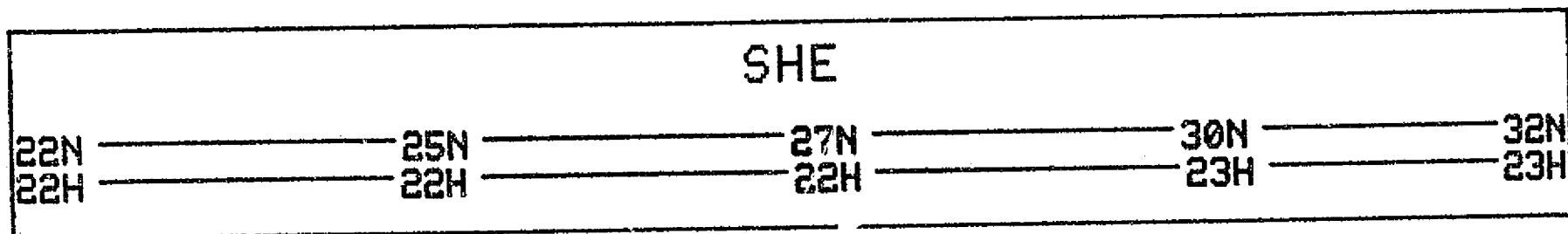


DAY 98 1977

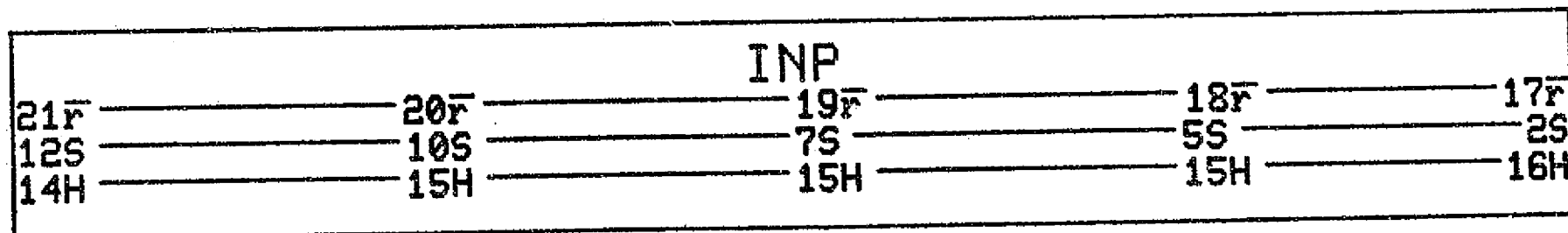
MOON



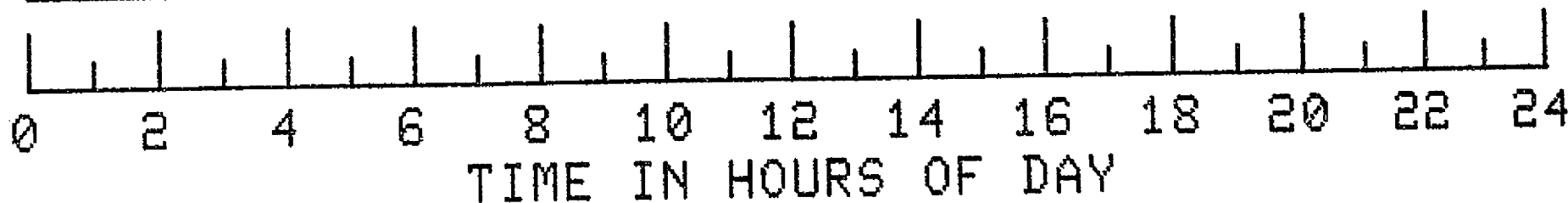
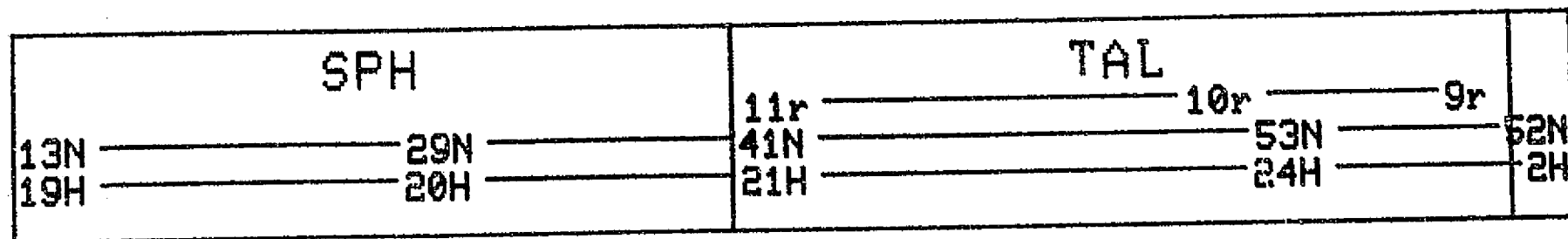
IMP-J



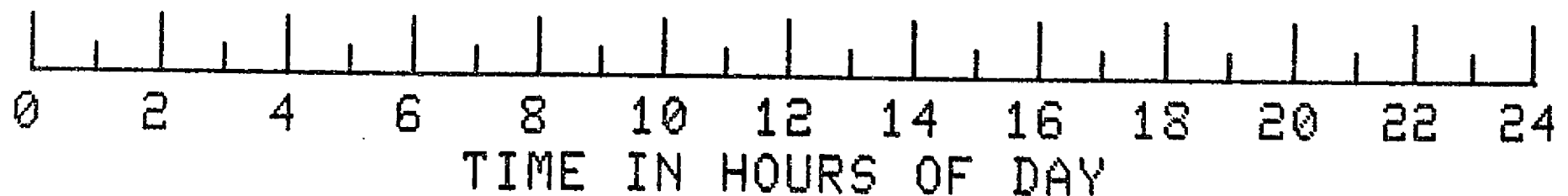
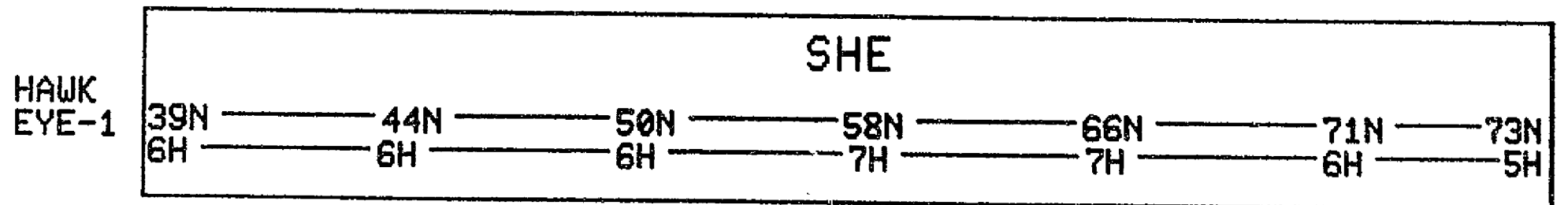
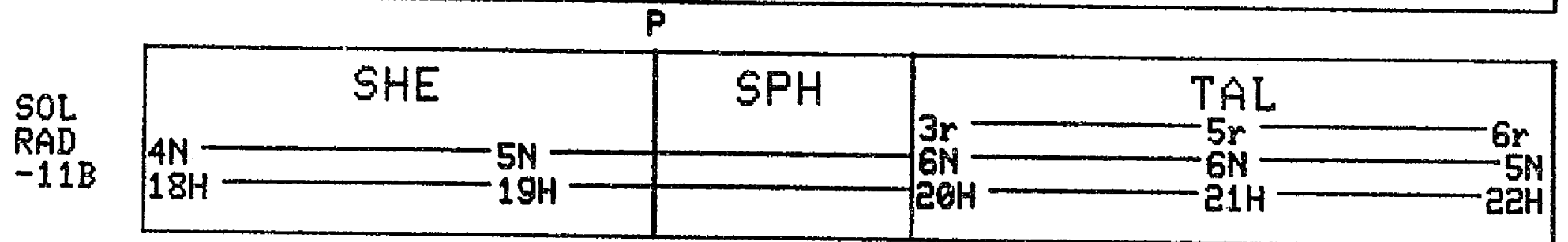
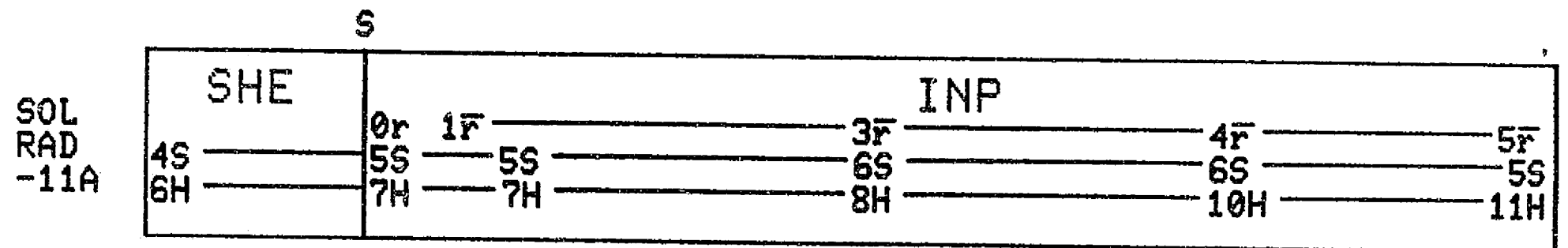
IMP-H



VELA
-5B

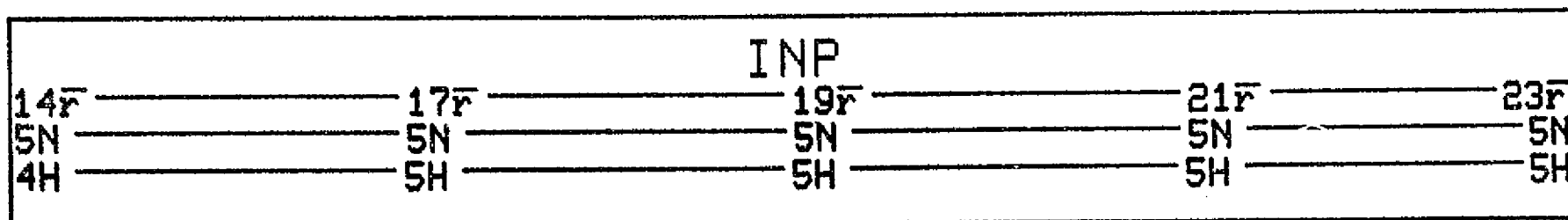


DAY 98 1977

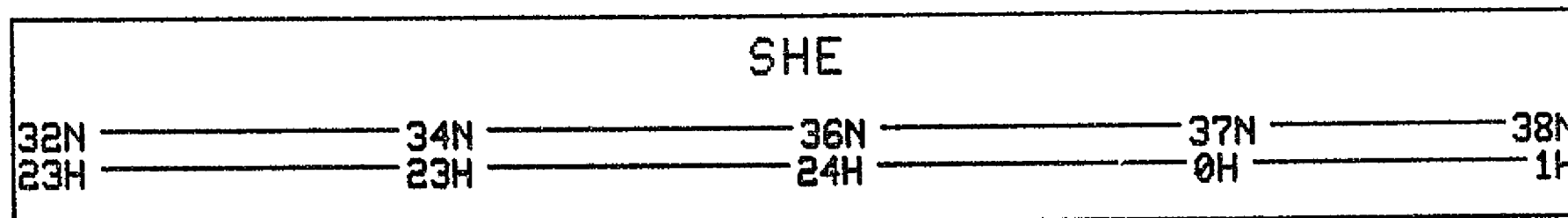


DAY 99 1977

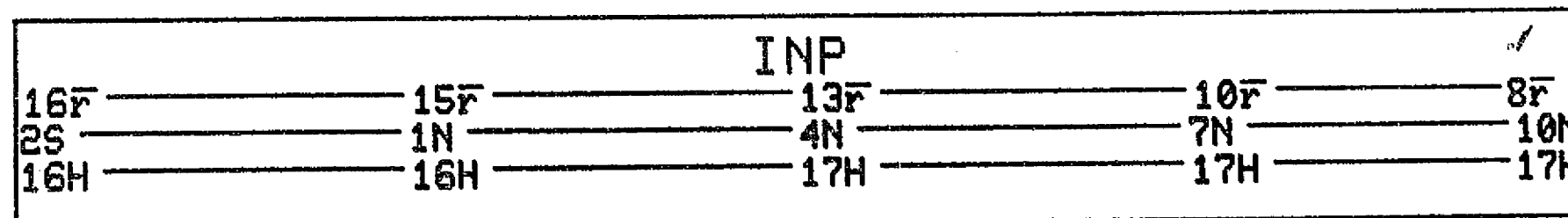
MOON



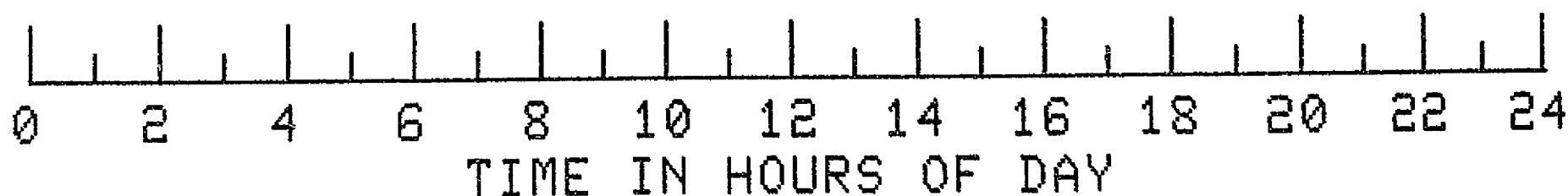
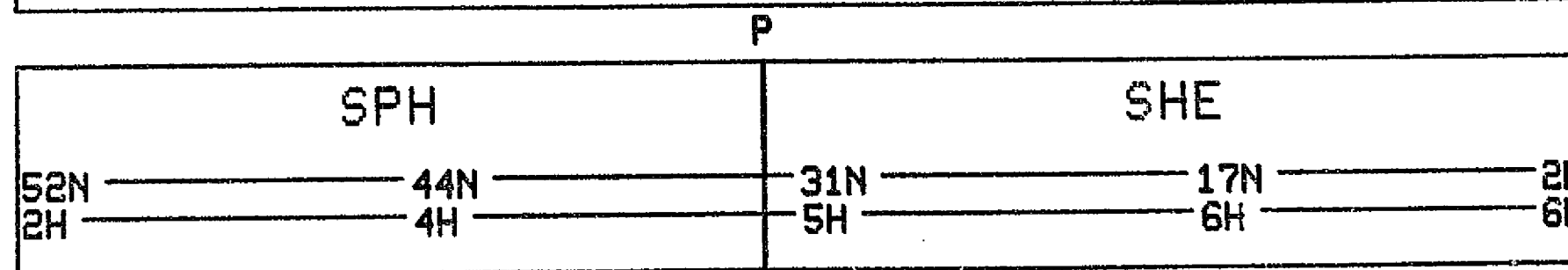
IMP-J



IMP-H

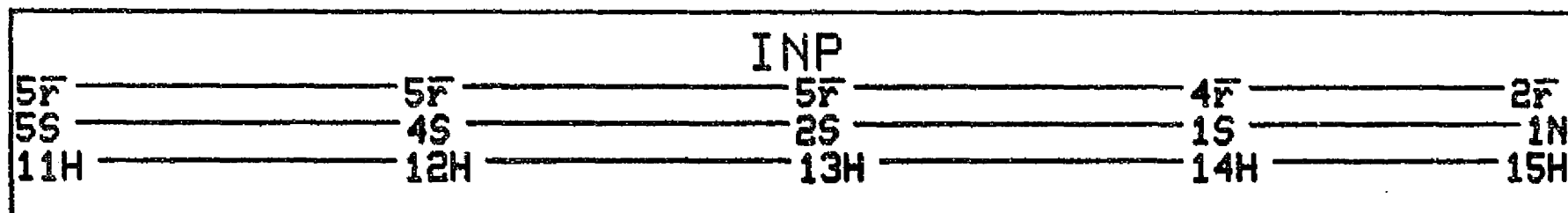


VELA
-5B

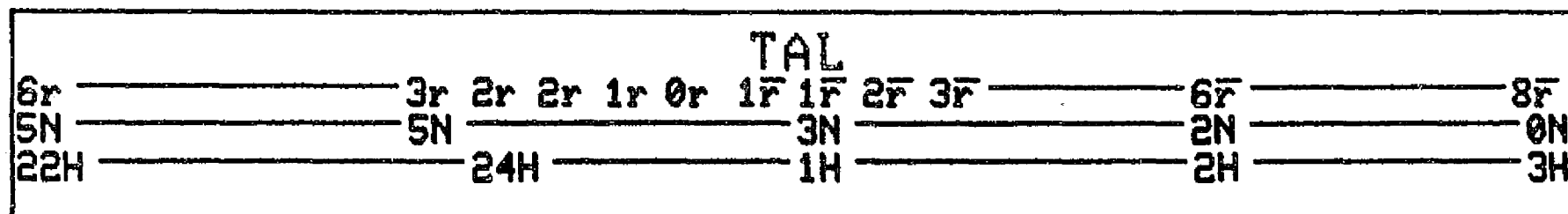


DAY 99 1977

SOL
RAD
-11A



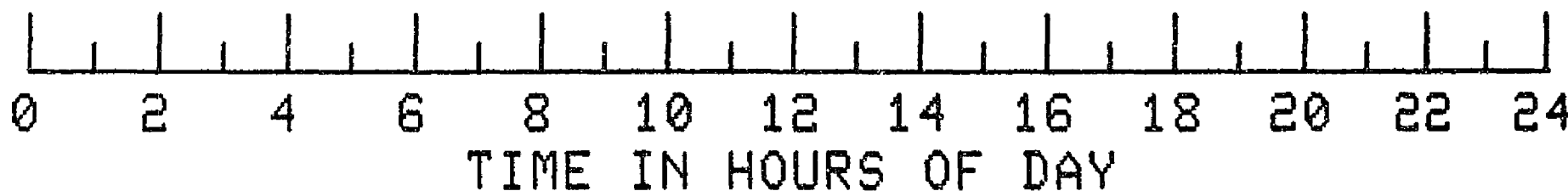
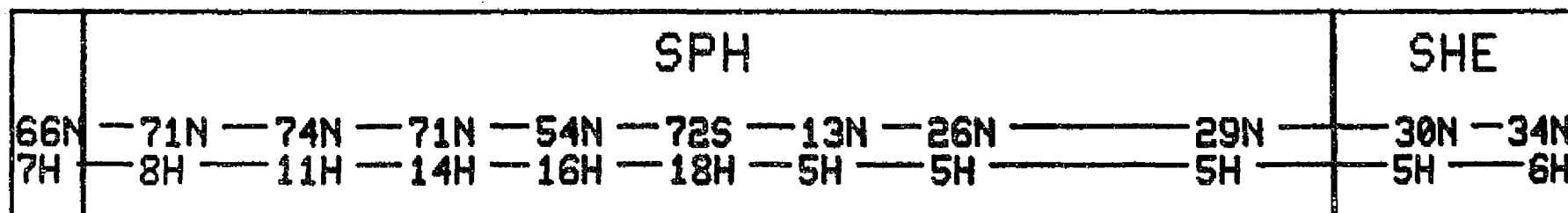
SOL
RAD
-11B



P

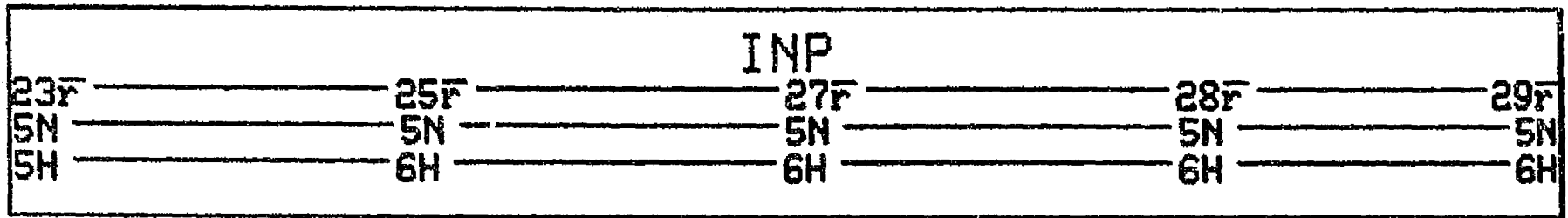
P

HAWK
EYE-1

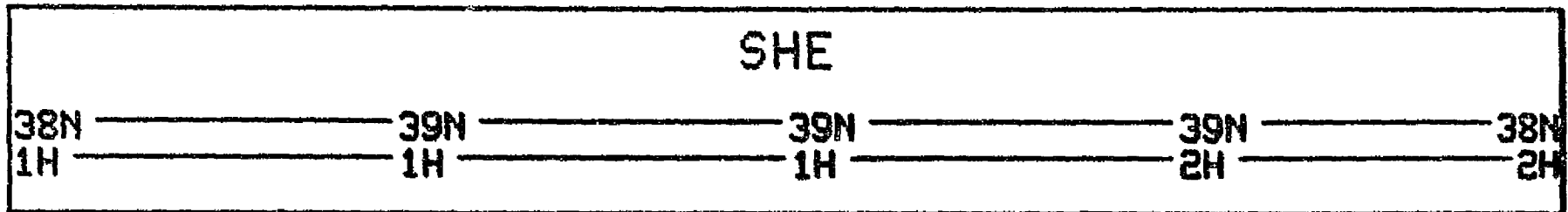


DAY 100 1977

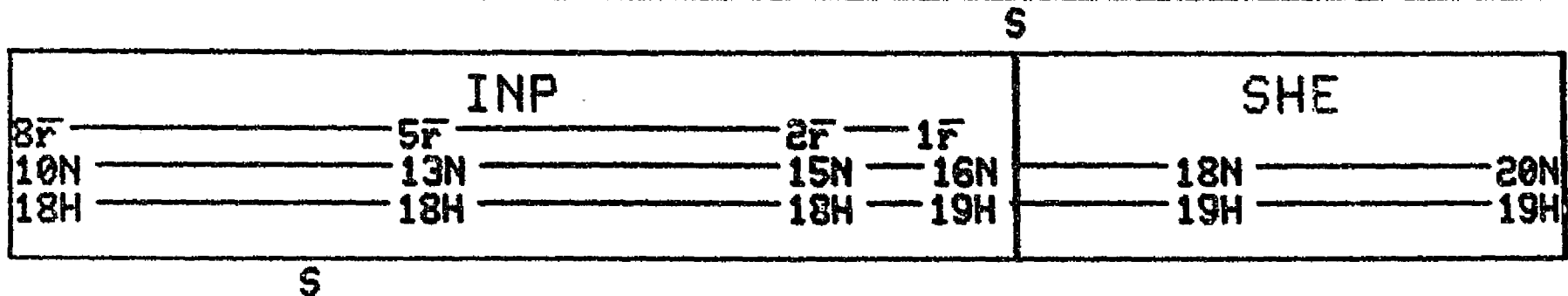
MOON



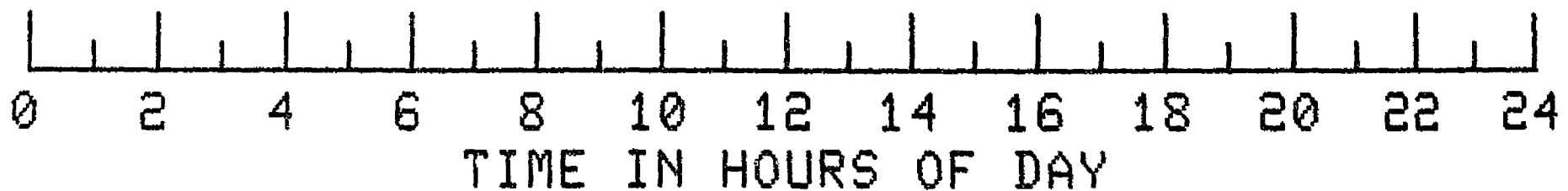
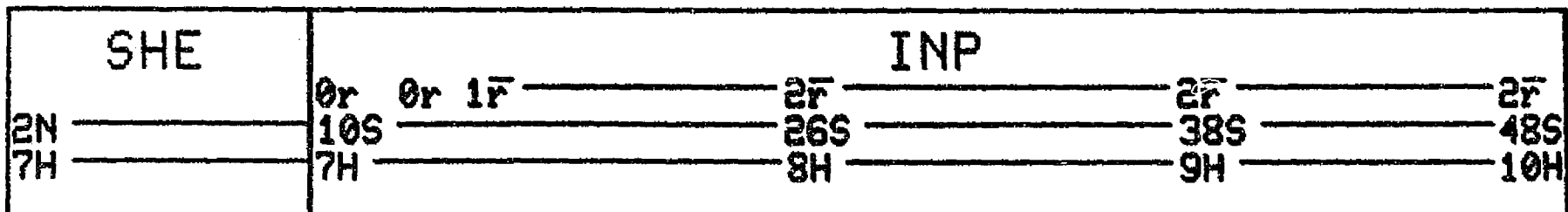
IMP-J



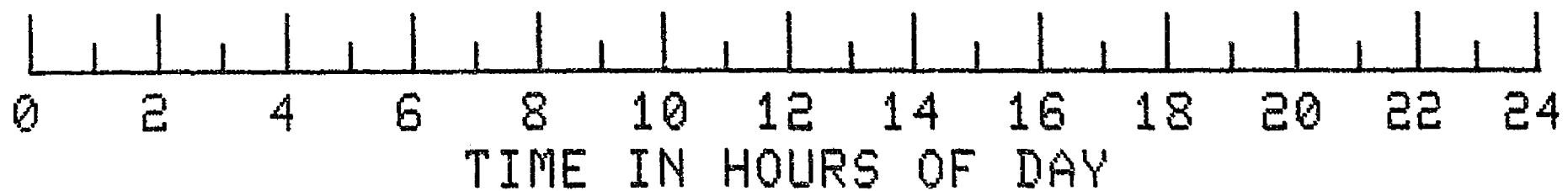
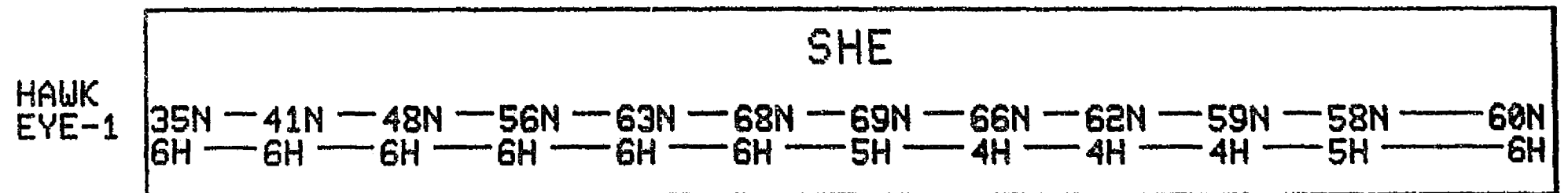
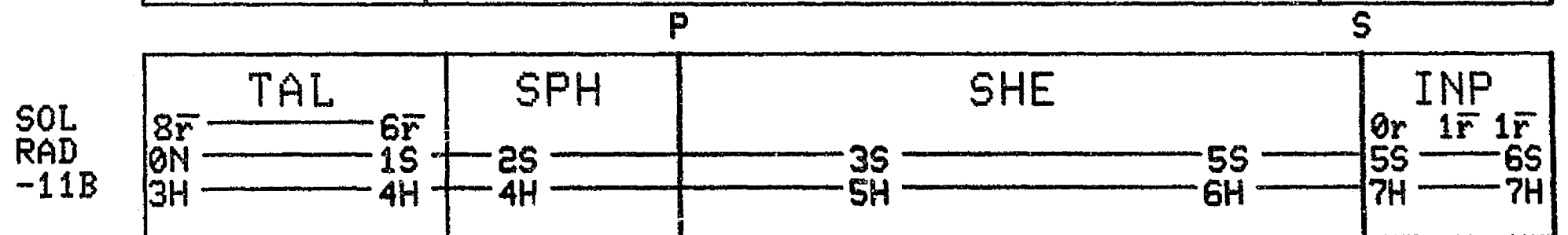
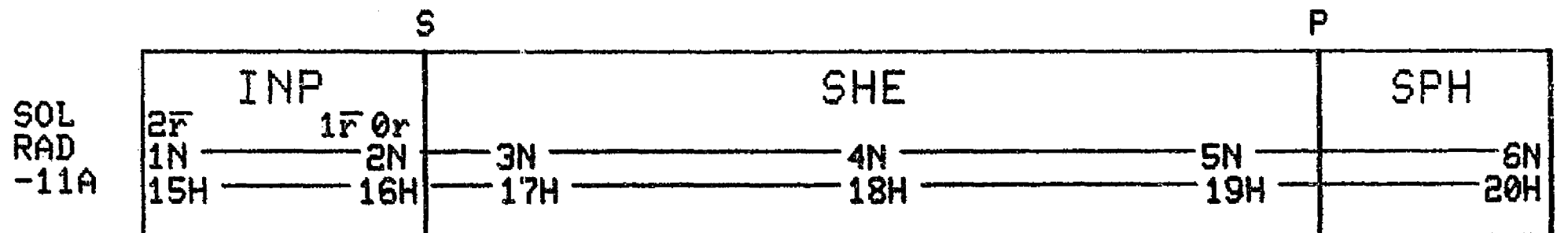
IMP-H



VELA
-5B

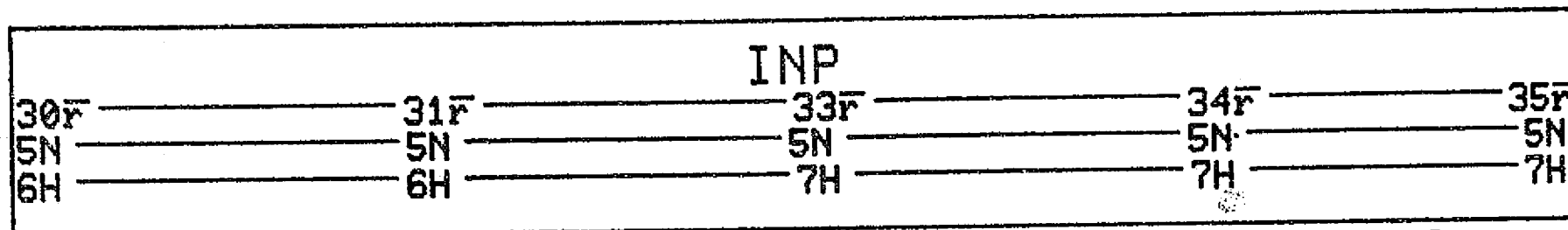


DAY 100 1977



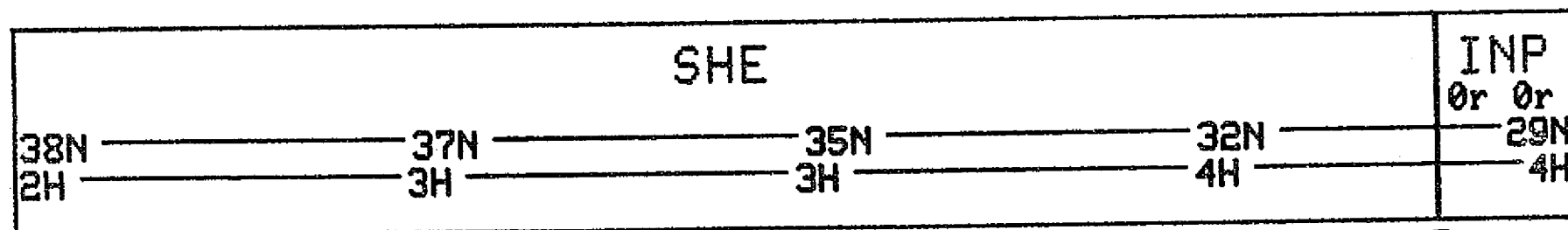
DAY 101 1977

MOON



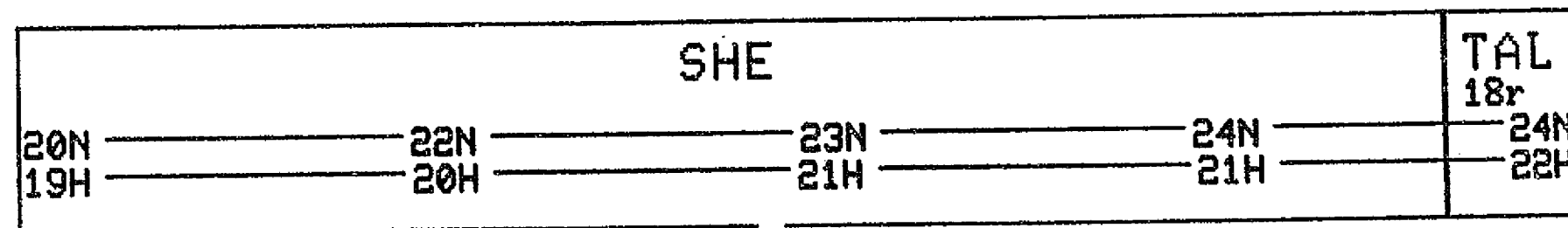
S

IMP-J



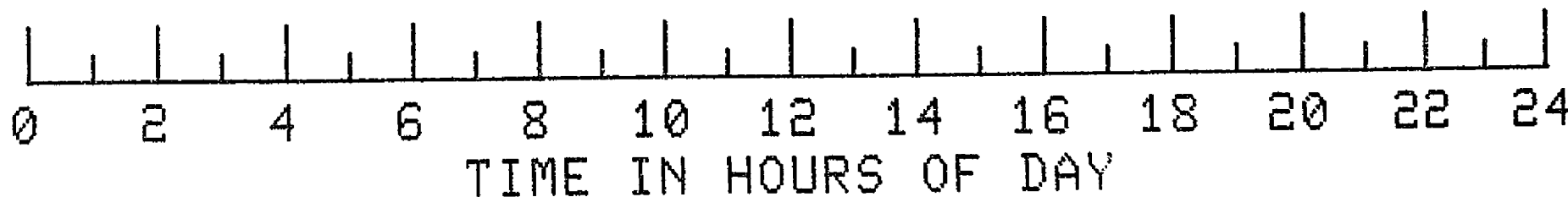
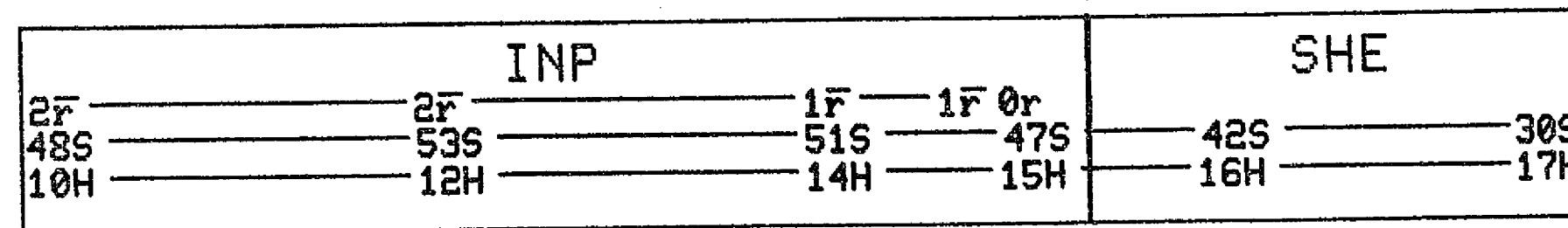
P

IMP-H



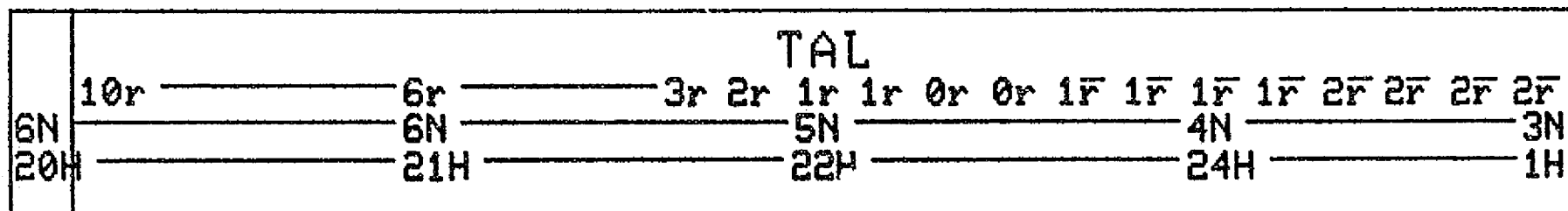
S

VELA
-5B

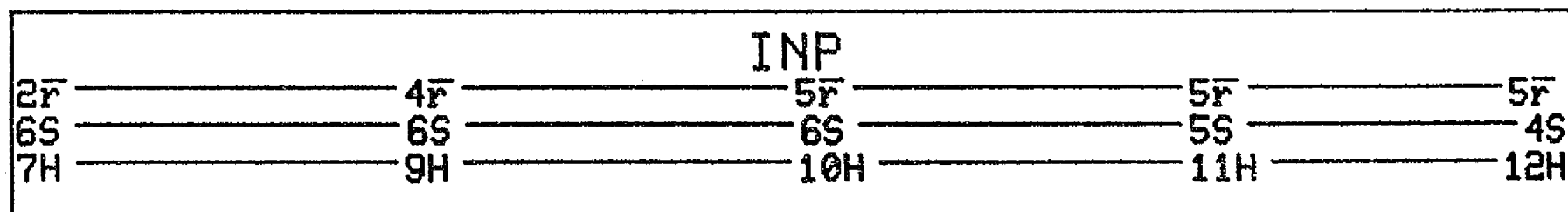


DAY 101 1977

SOL
RAD
-11A

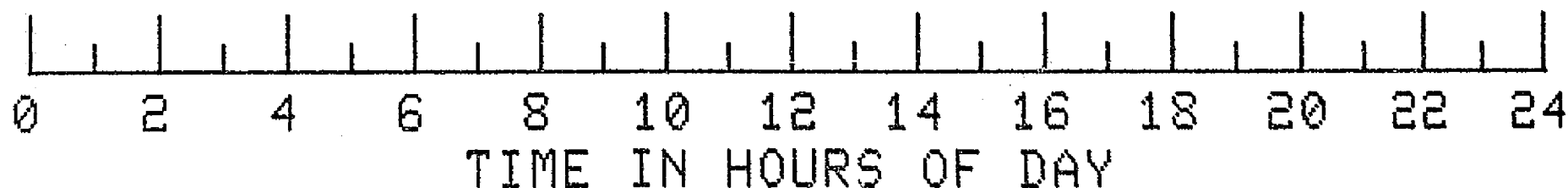
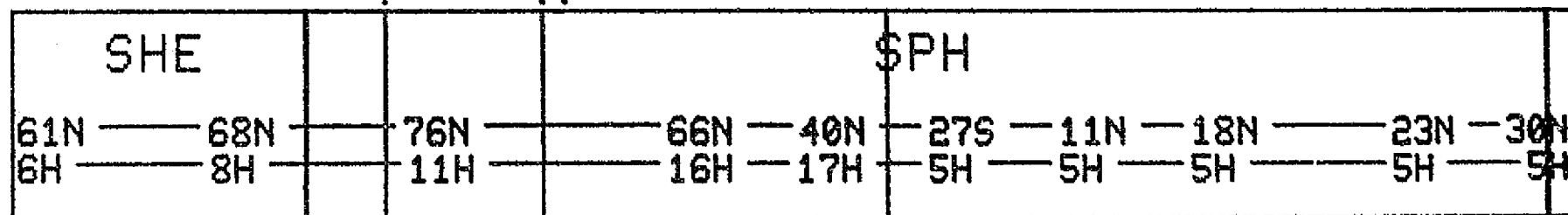


SOL
RAD
-11B



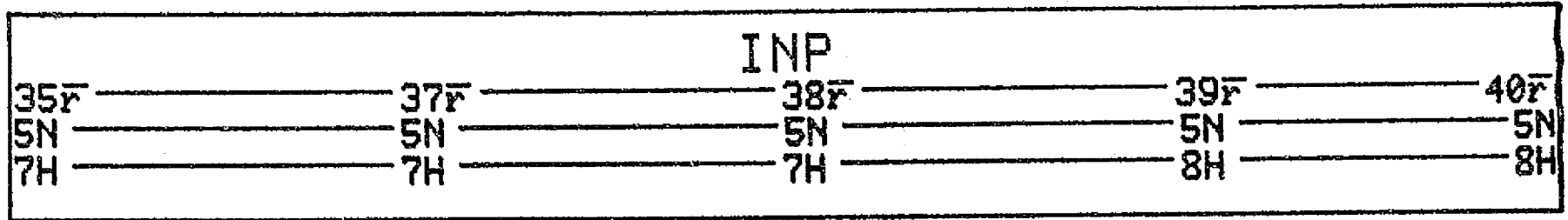
P C C C P

HAWK
EYE-1

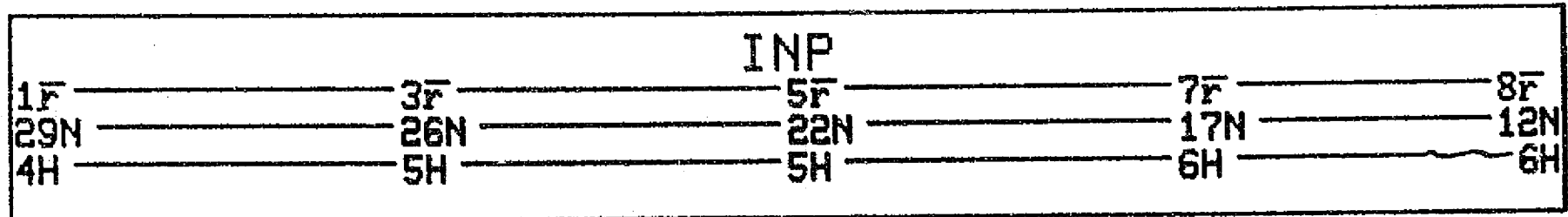


DAY 102 1977

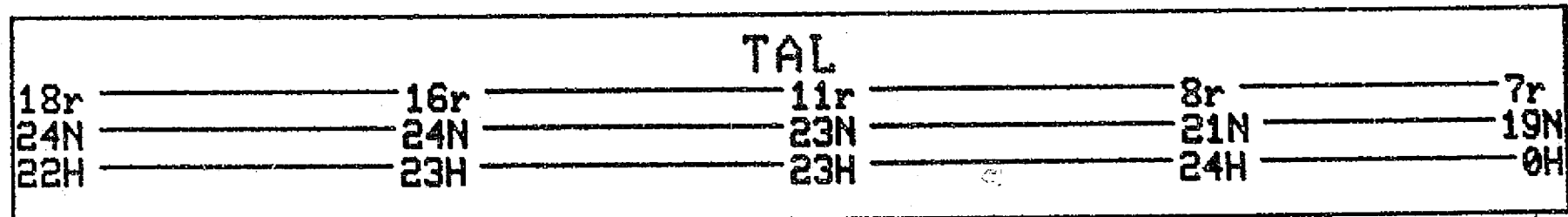
MOON



IMP-J

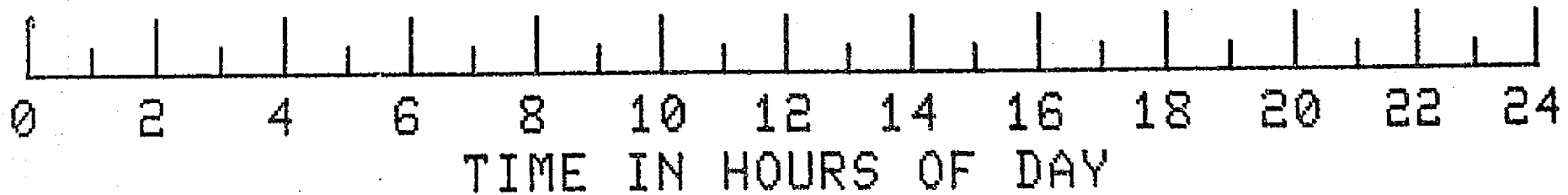
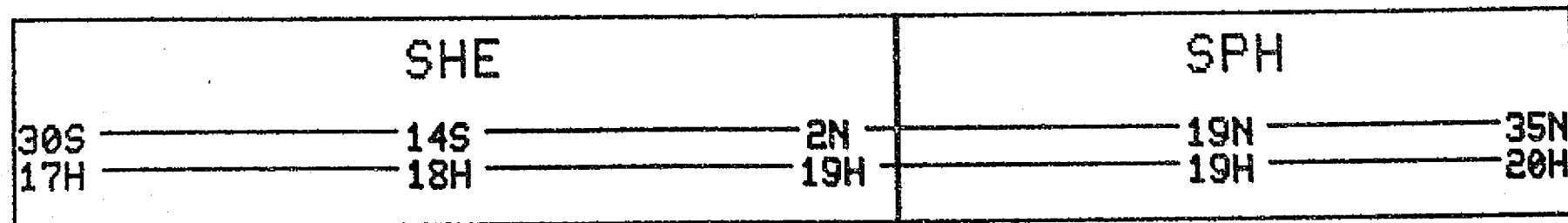


IMP-H



P

VELA
-5B



DAY 102 1977

SOL
RAD
-11A

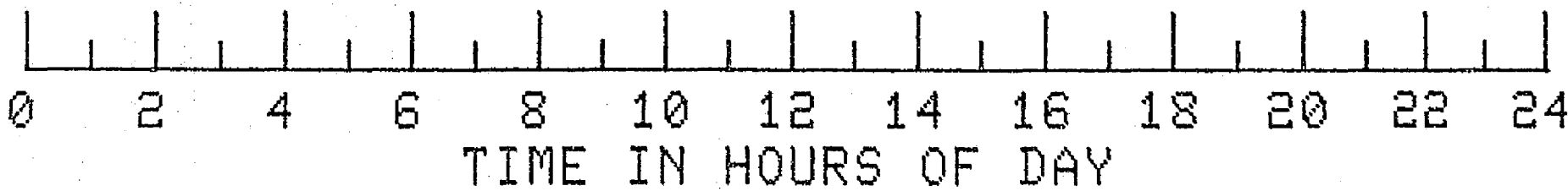
| TAL | | | | | | | | | | SPH | | SHE | |
|-----|----|----|----|----|----|----|----|----|----|-----|----|-----|----|
| 2r | 2r | 2r | 2r | 2r | 2r | 2r | 2r | 3r | 5r | 8r | | | |
| 3N | | | | | | 1N | | | 1S | 2S | 2S | | 4S |
| 1H | | | | | | 2H | | | 3H | 4H | 4H | | 5H |

SOL
RAD
-11B

| INP | | | | | | | | | | SHE | | |
|-----|--|--|--|-----|--|--|--|-----|-----|-----|----|-----|
| 5r | | | | 4r | | | | 3r | 2r | 1r | 0r | |
| 4S | | | | 2S | | | | 0N | 2N | 2N | | 3N |
| 12H | | | | 13H | | | | 14H | 16H | 16H | | 17H |

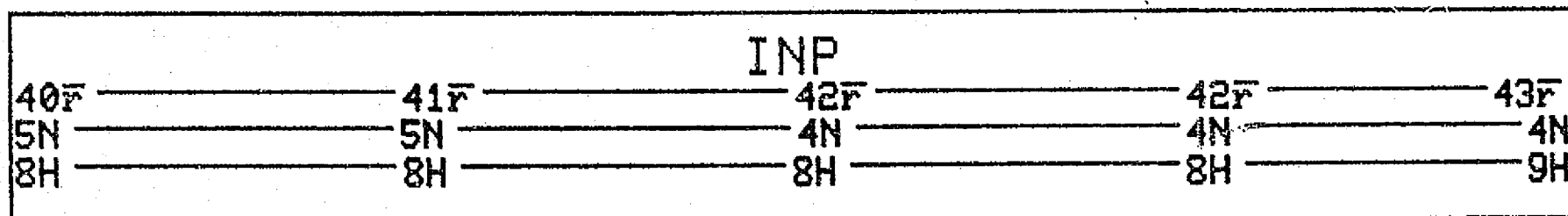
HAWK
EYE-1

| SHE | | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|--|
| 30N | 36N | 45N | 54N | 61N | 65N | | 60N | 55N | 54N | 57N | |
| 5H | 6H | 6H | 6H | 6H | 5H | | 4H | 4H | 5H | 6H | |

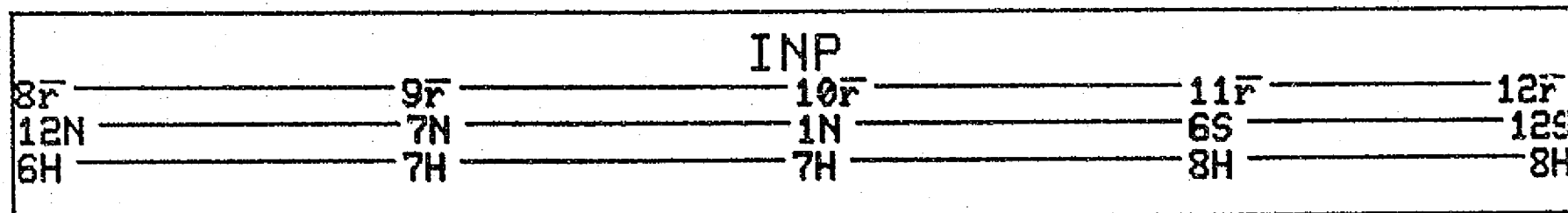


DAY 103 1977

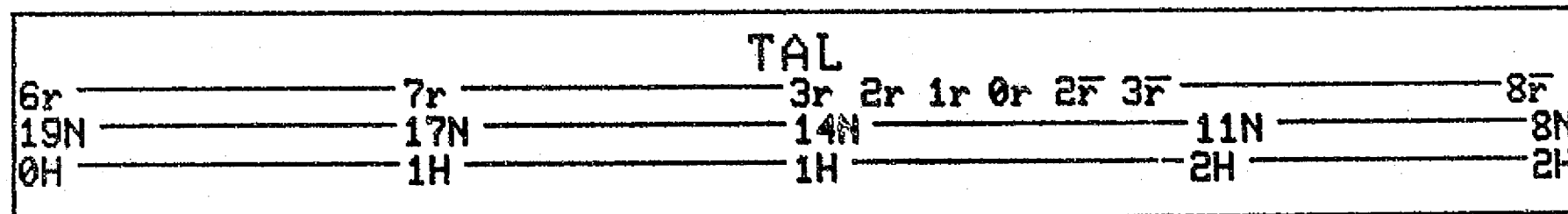
MOON



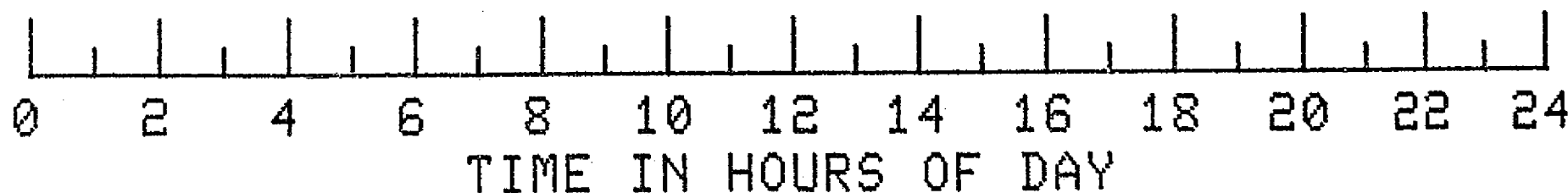
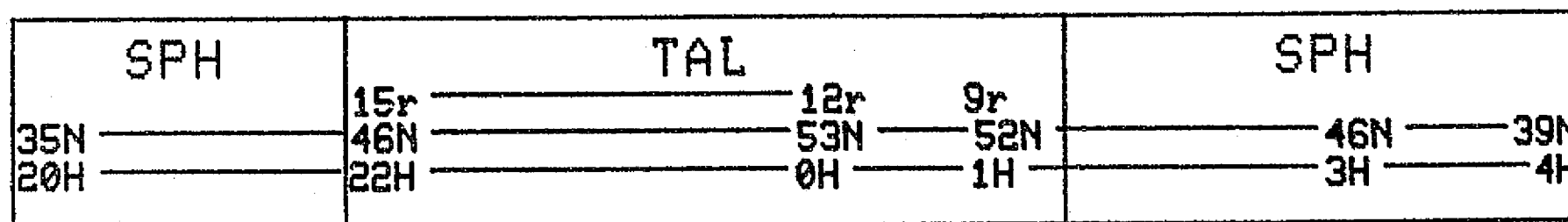
IMP-J



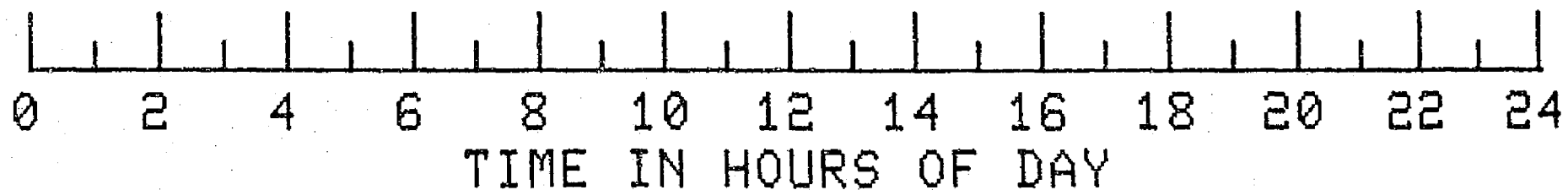
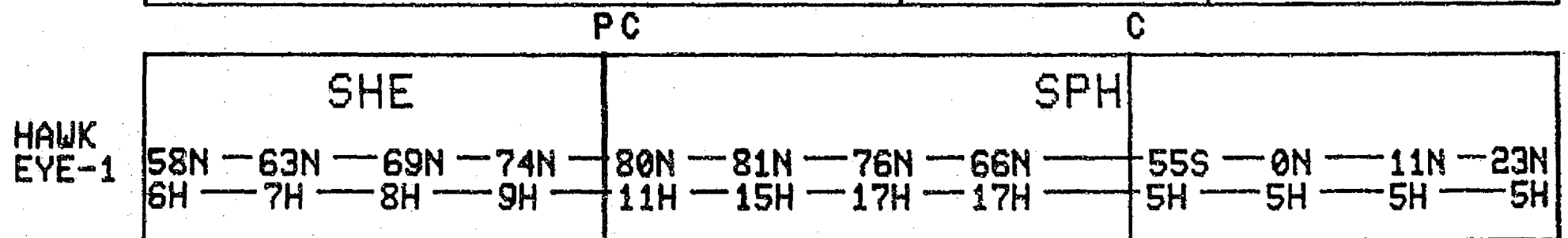
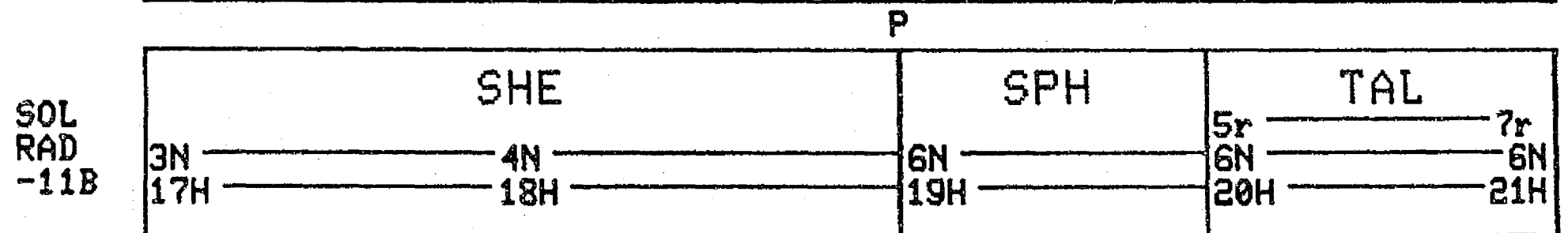
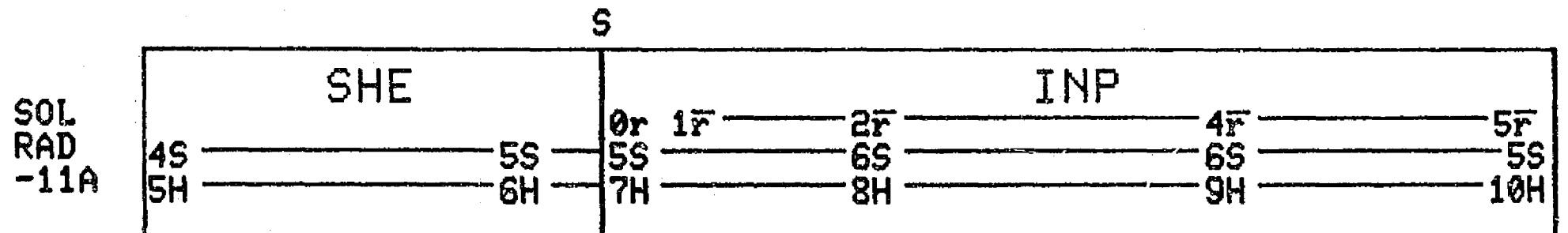
IMP-H



VELA
-5B

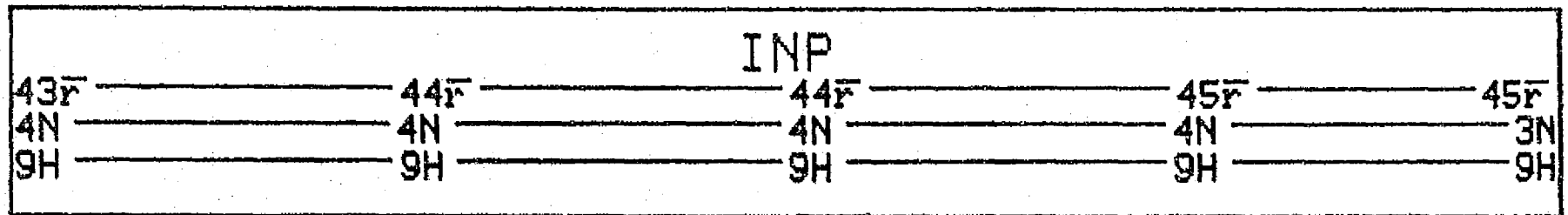


DAY 103 1977

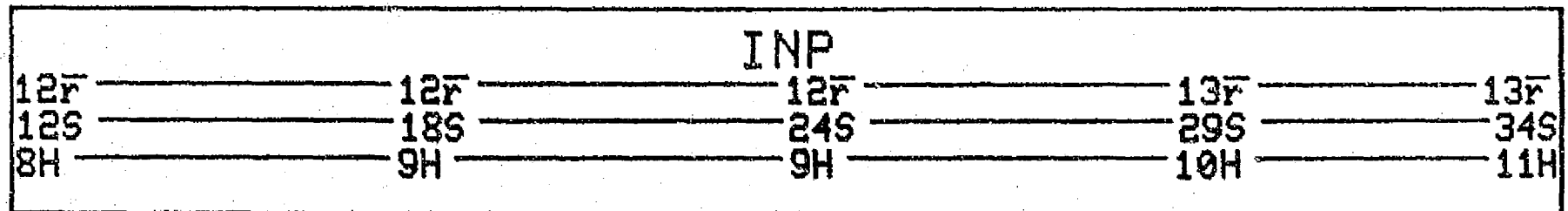


DAY 104 1977

MOON

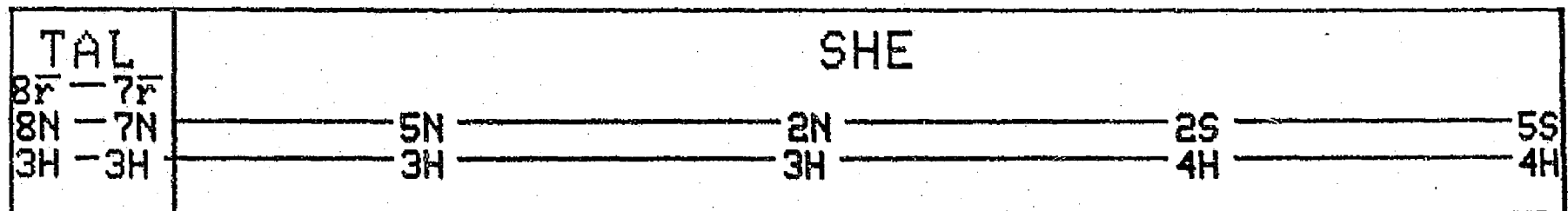


IMP-J



P

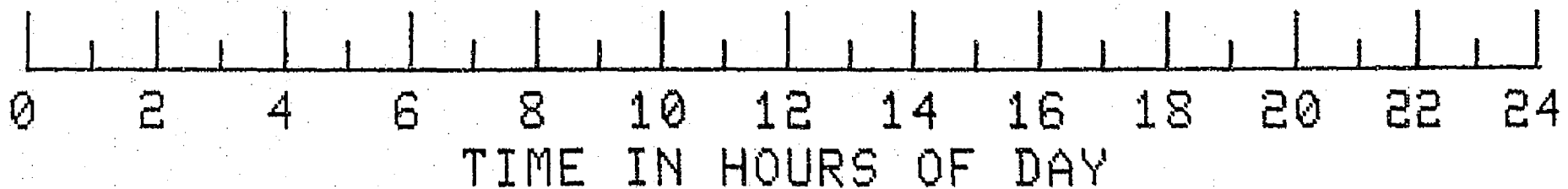
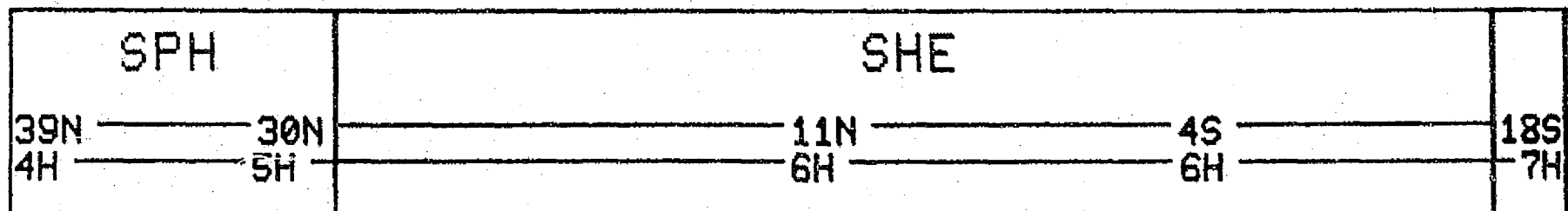
IMP-H



P

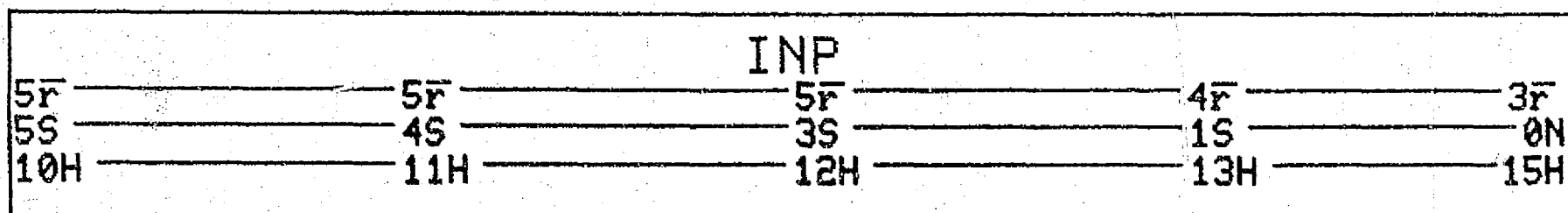
S

VELA
-5B

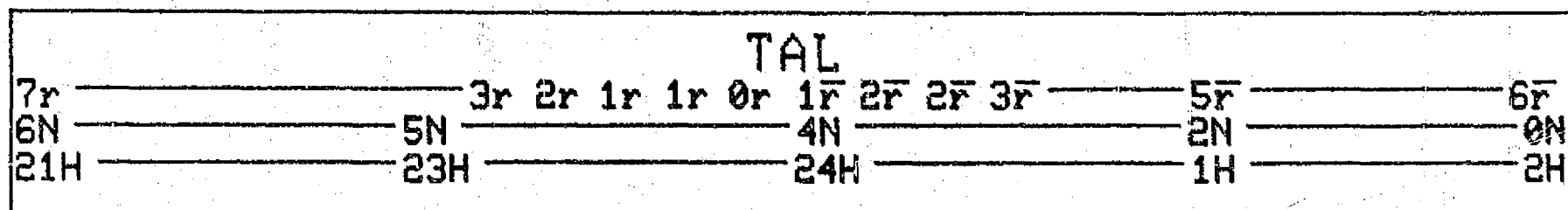


DAY 104 1977

SOL
RAD
-11A

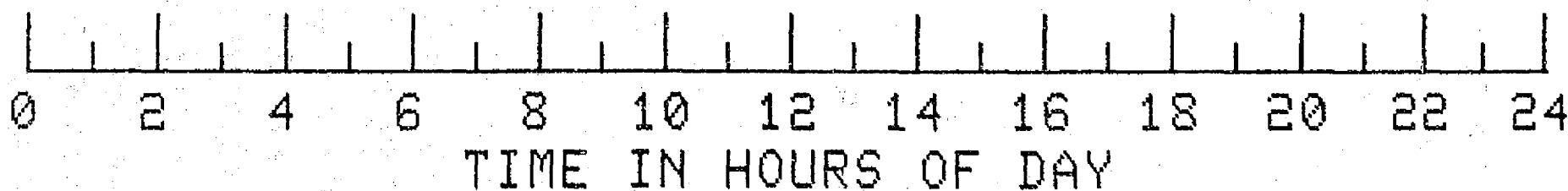
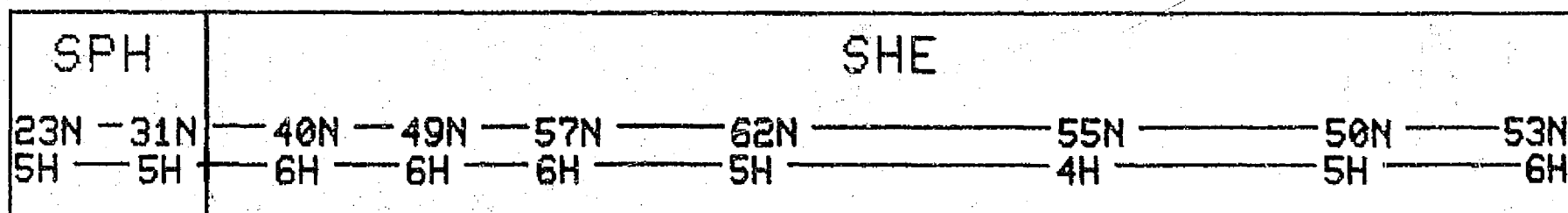


SOL
RAD
-11B



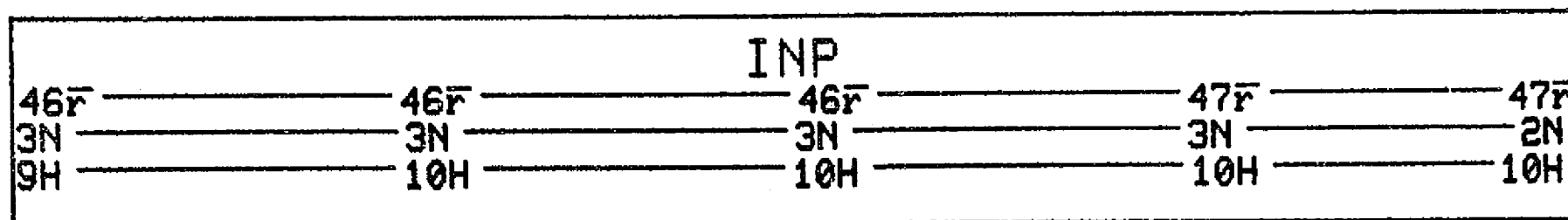
P

HAWK
EYE-1

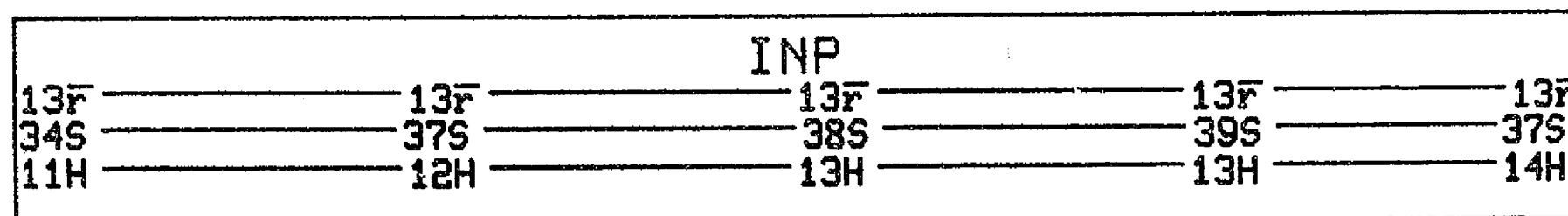


DAY 105 1977

MOON

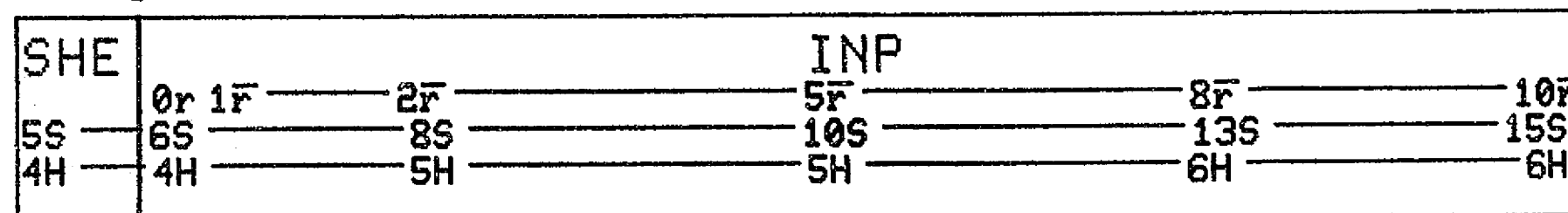


IMP-J

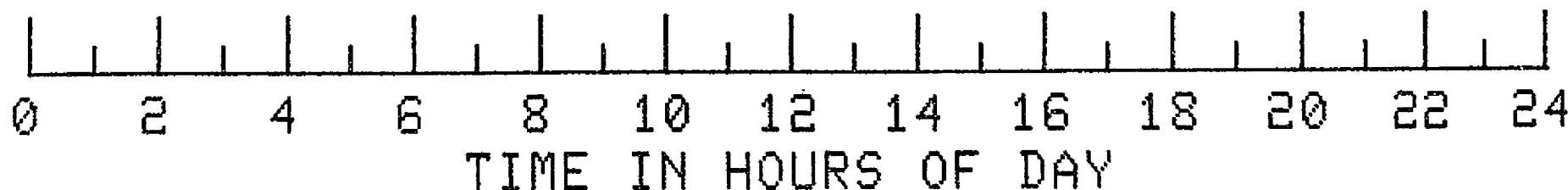
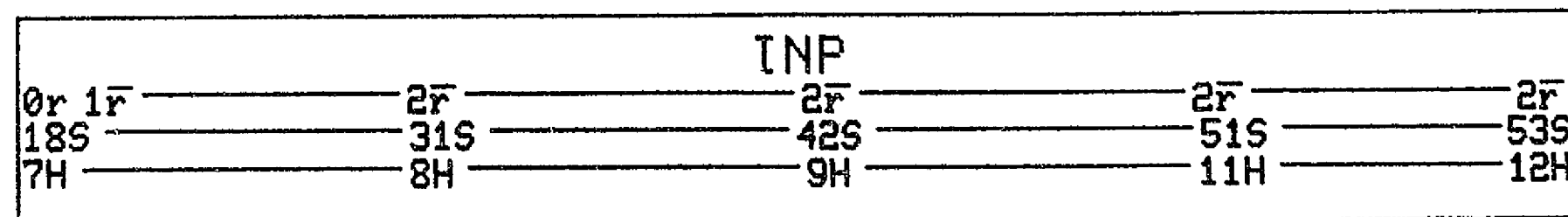


S

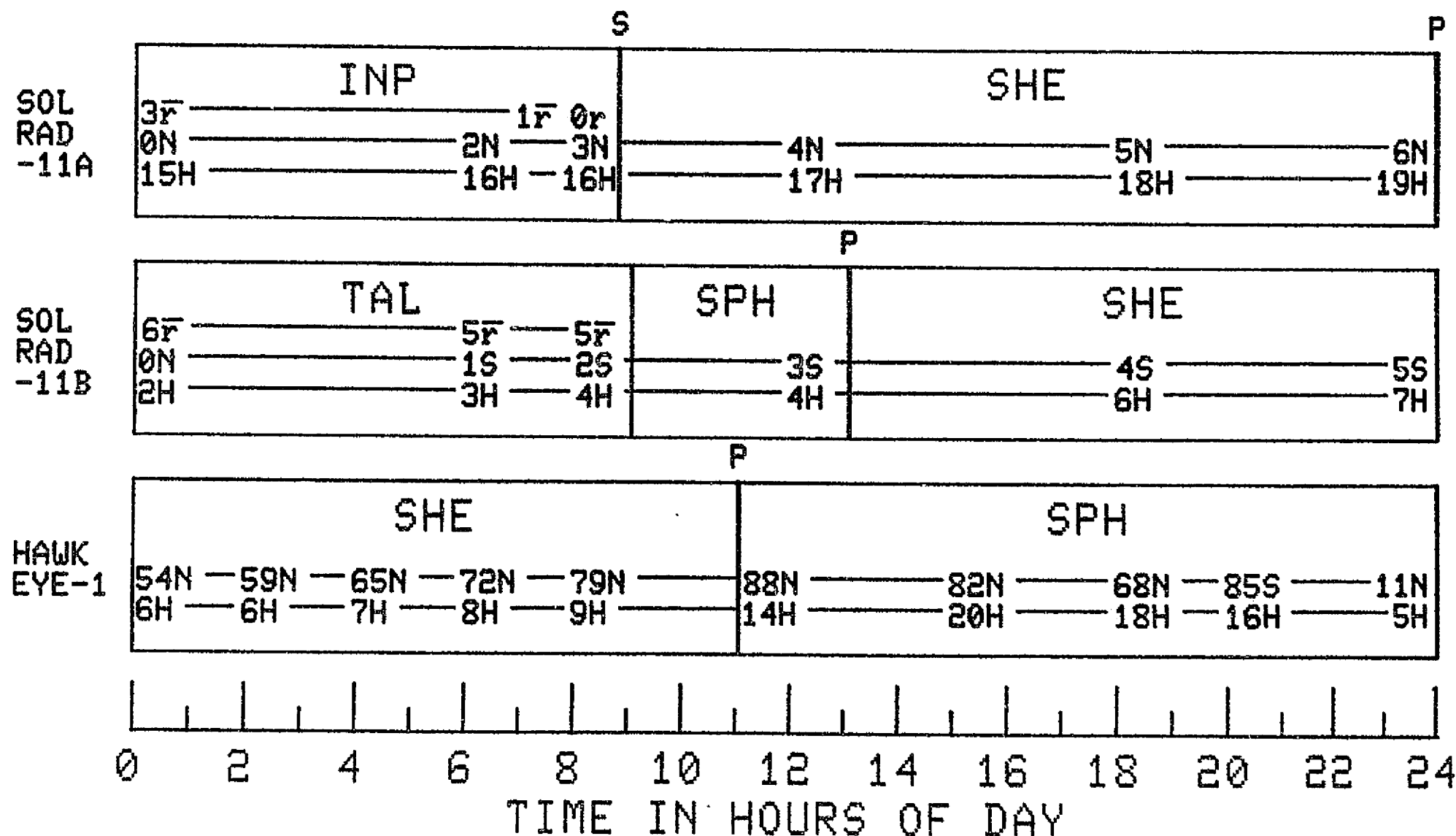
IMP-H



VELA
-5B



DAY 105 1977



DAY 106 1977

MOON

| INP | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 47 \overline{r} | 47 \overline{r} | 48 \overline{r} | 48 \overline{r} | 48 \overline{r} |
| 2N | 2N | 2N | 2N | 1N |
| 10H | 10H | 11H | 11H | 11H |

IMP-J

| INP | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 13 \overline{r} | 12 \overline{r} | 12 \overline{r} | 11 \overline{r} | 10 \overline{r} |
| 37S | 35S | 32S | 28S | 24S |
| 14H | 15H | 16H | 16H | 17H |

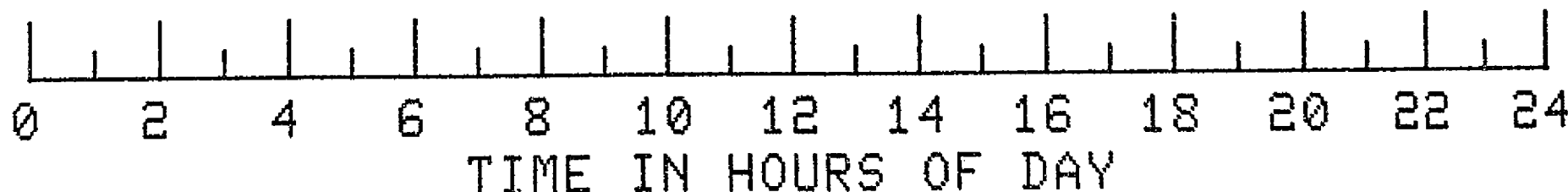
IMP-H

| INP | | | | |
|-------------------|-------------------|-------------------|-------------------|-------------------|
| 11 \overline{r} | 13 \overline{r} | 15 \overline{r} | 17 \overline{r} | 18 \overline{r} |
| 15S | 17S | 19S | 21S | 22S |
| 6H | 6H | 7H | 7H | 8H |

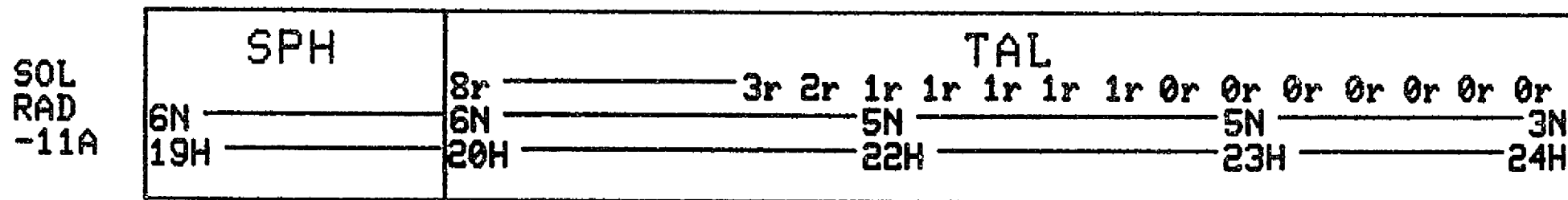
S

VELA
-5B

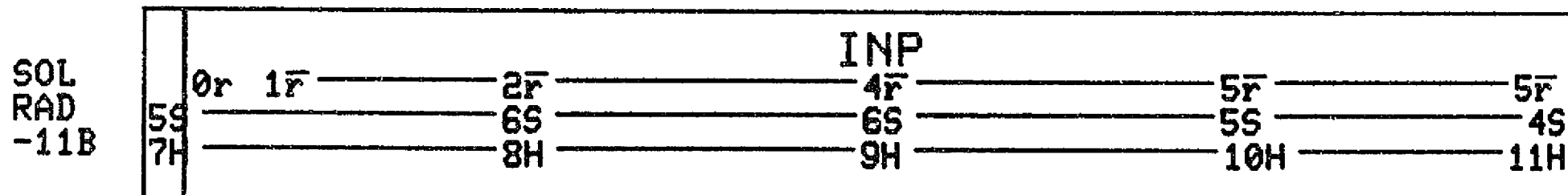
| INP | | | | SHE | | | |
|------------------|------------------|------------------|------------------|-----|-----|--|-----|
| 2 \overline{r} | 1 \overline{r} | 1 \overline{r} | 0 \overline{r} | | | | |
| 53S | | 45S | | 38S | 24S | | 8S |
| 13H | | 15H | | 16H | 17H | | 18H |



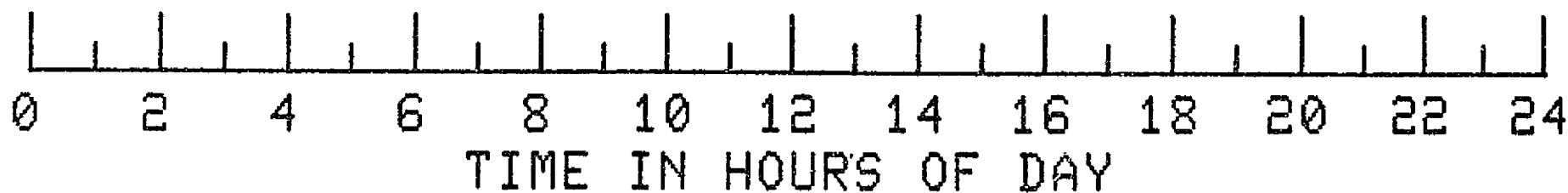
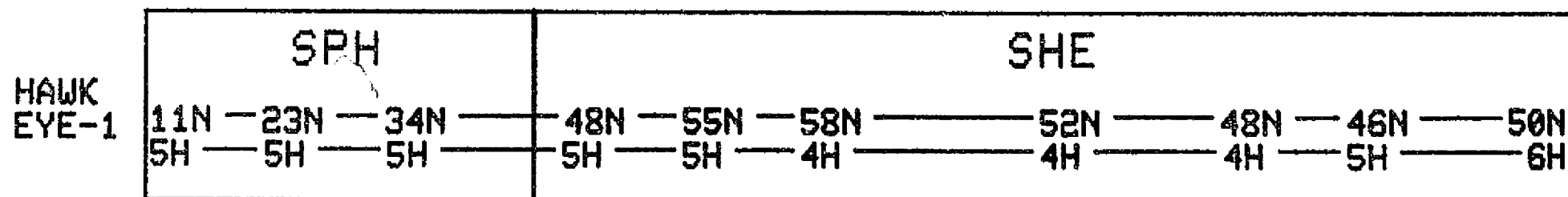
DAY 106 1977



S

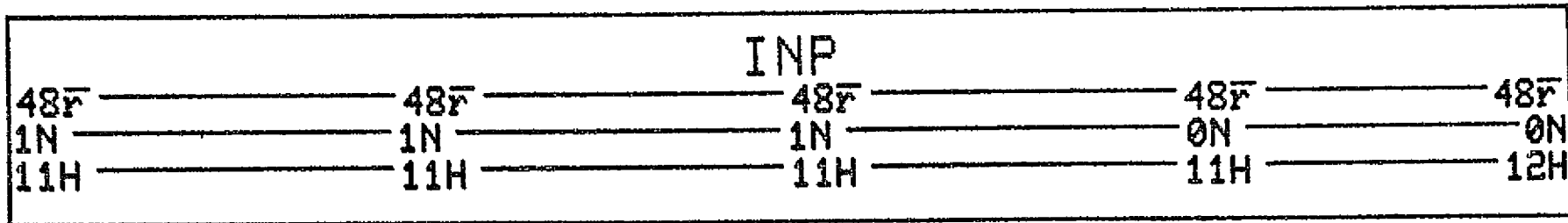


P

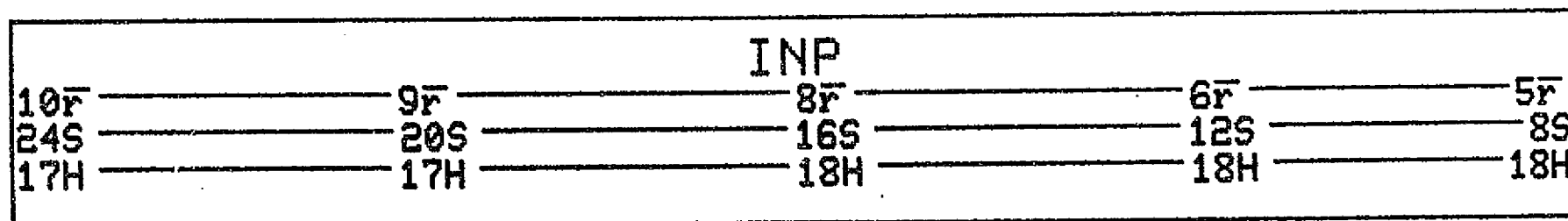


DAY 107 1977

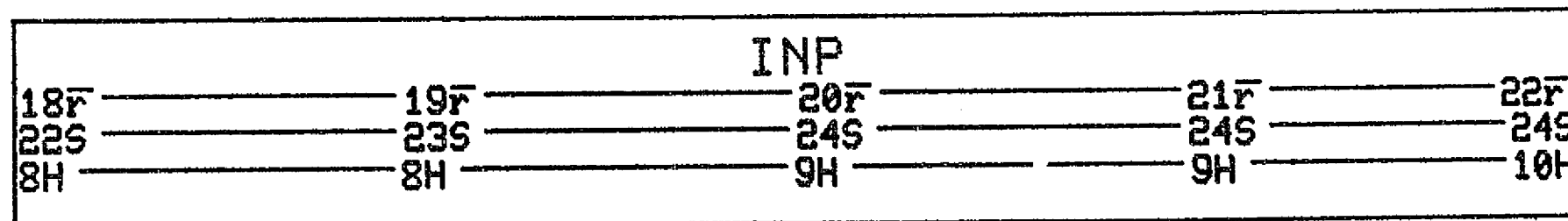
MOON



IMP-J

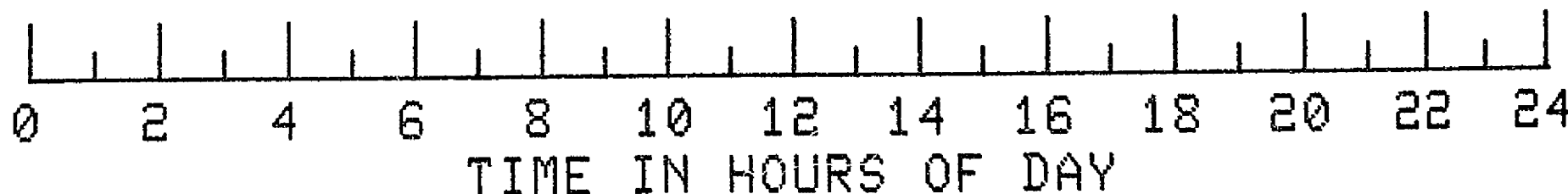
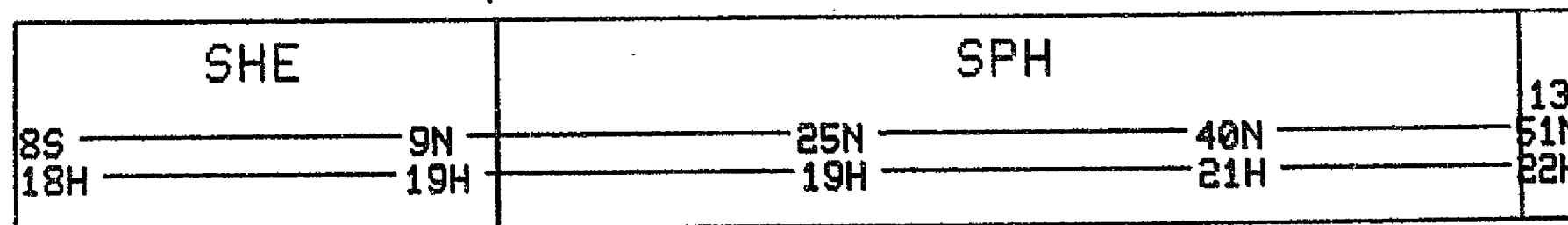


IMP-H



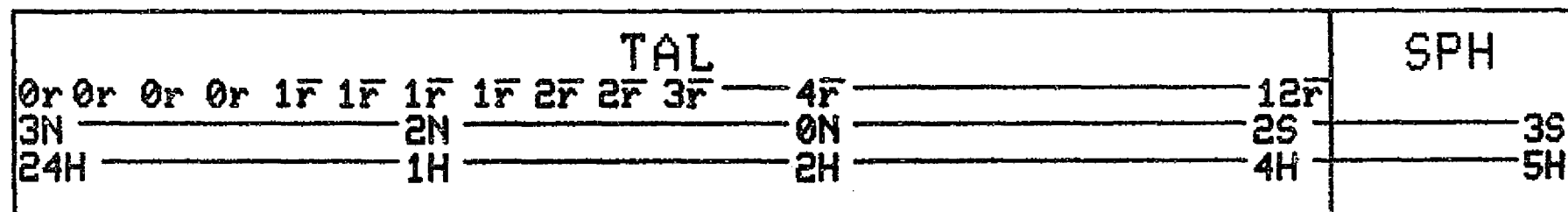
P

VELA
-5B

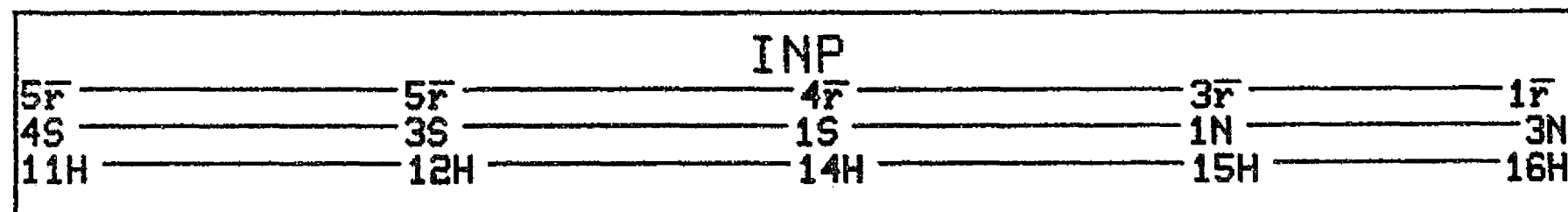


DAY 107 1977

SOL
RAD
-11A

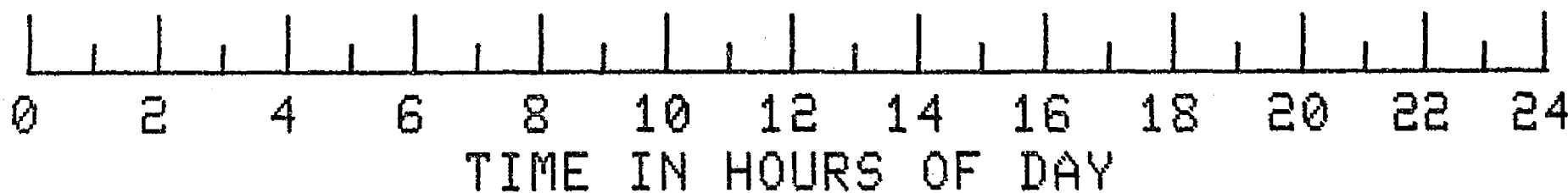
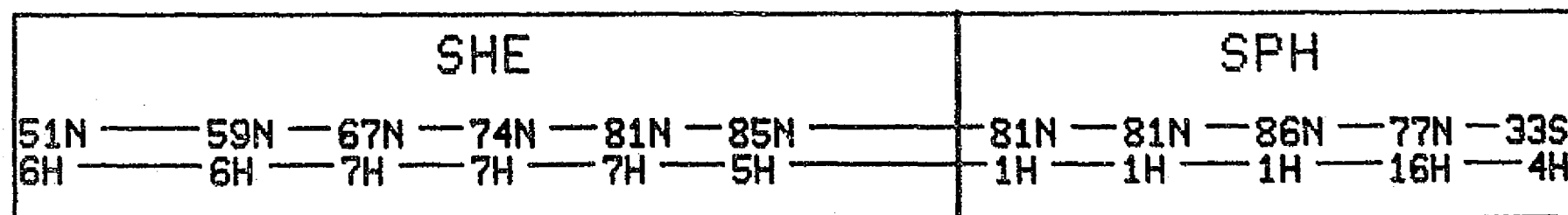


SOL
RAD
-11B



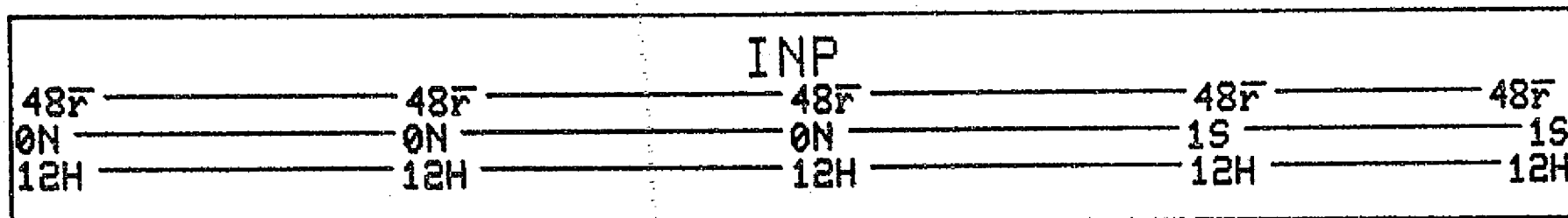
P

HAWK
EYE-1



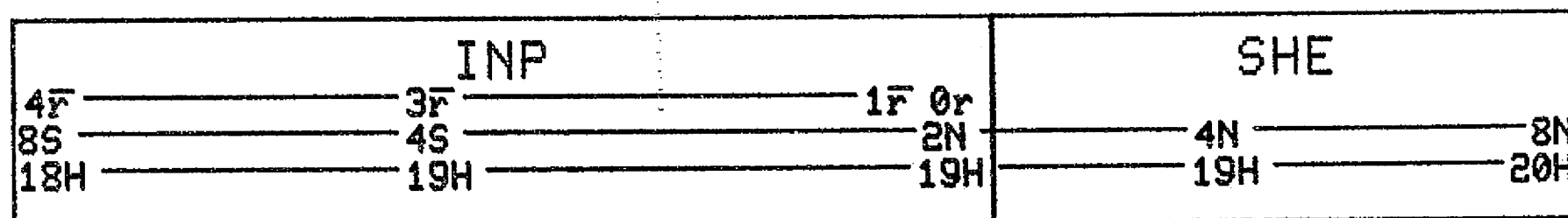
DAY 108 1977

MOON

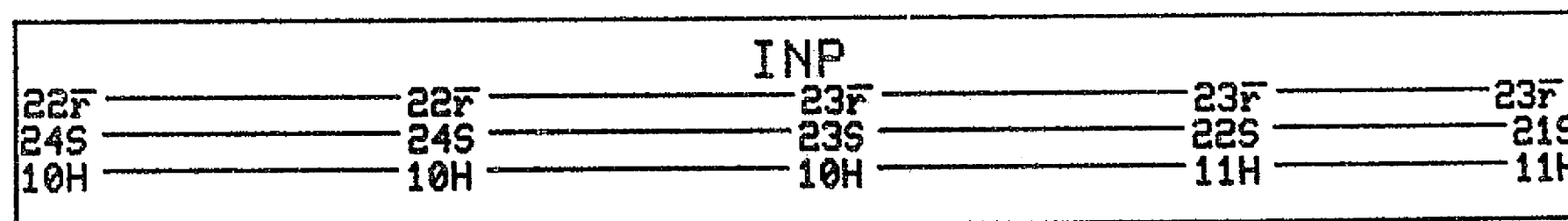


S

IMP-J

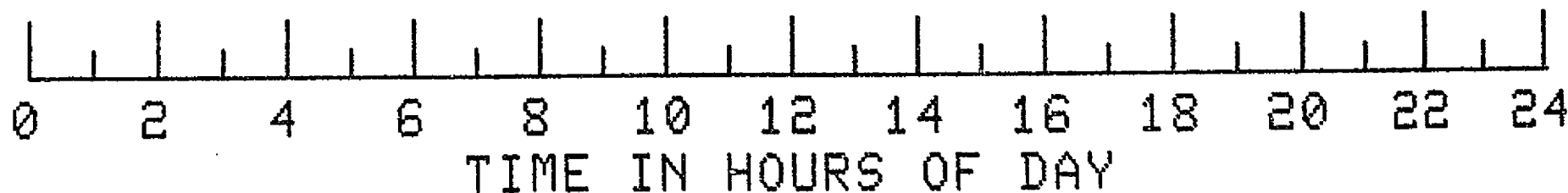
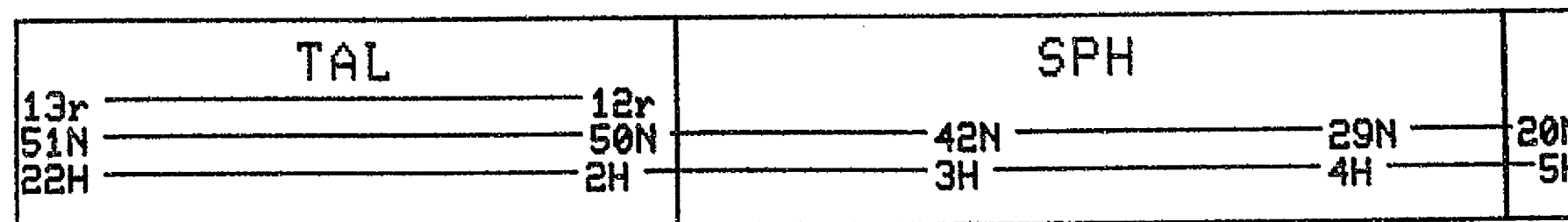


IMP-H

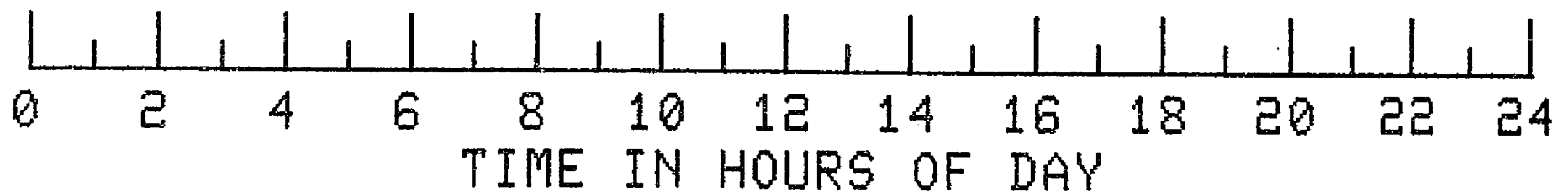
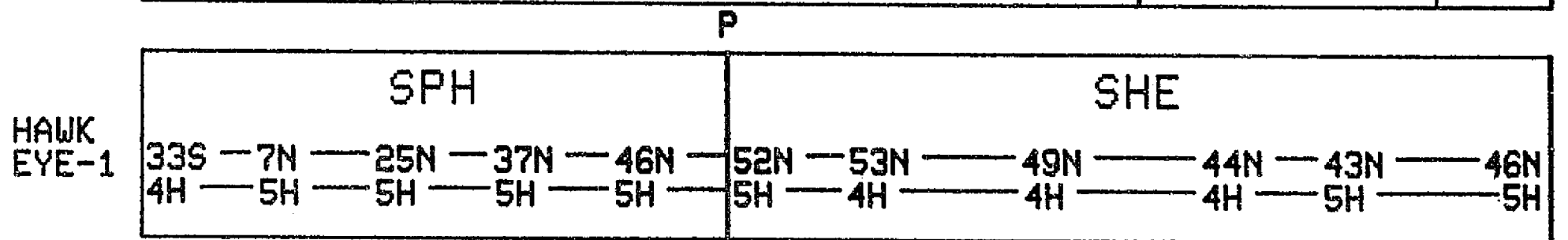
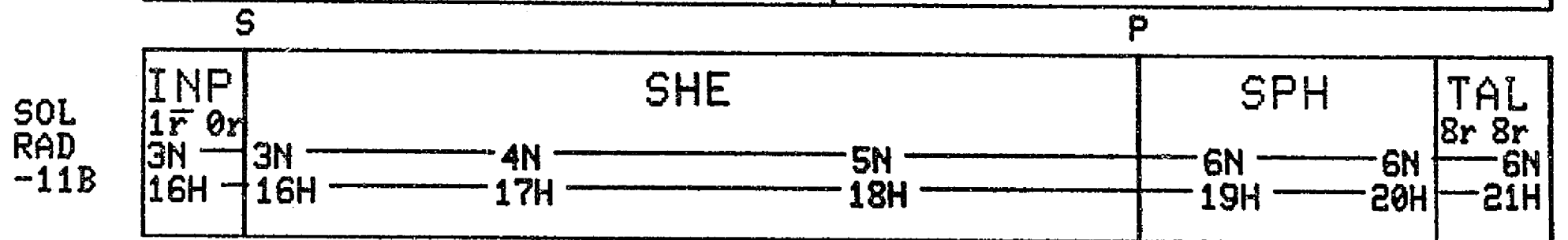
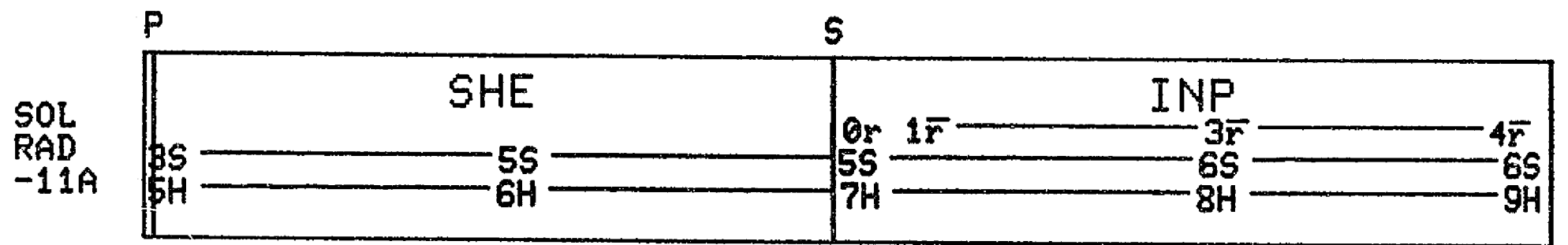


P

VELA
-5B

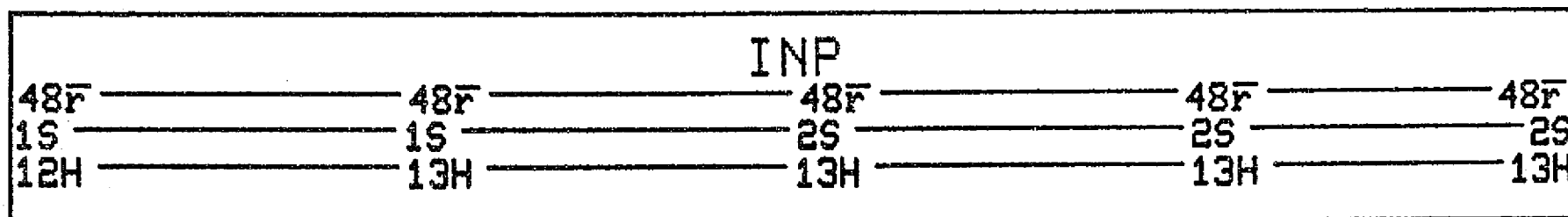


DAY 108 1977

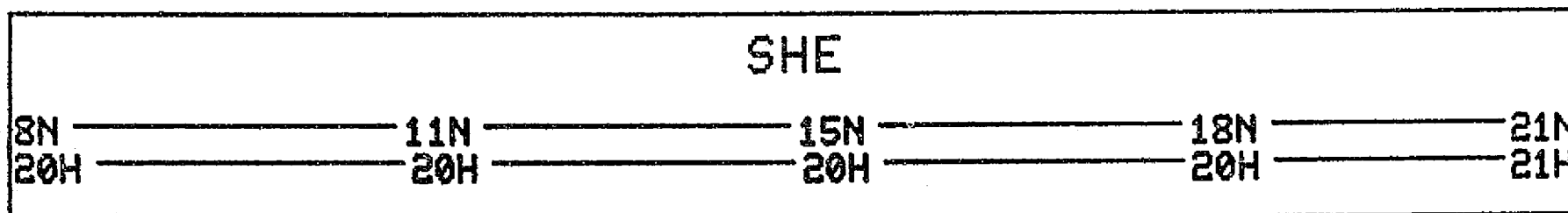


DAY 109 1977

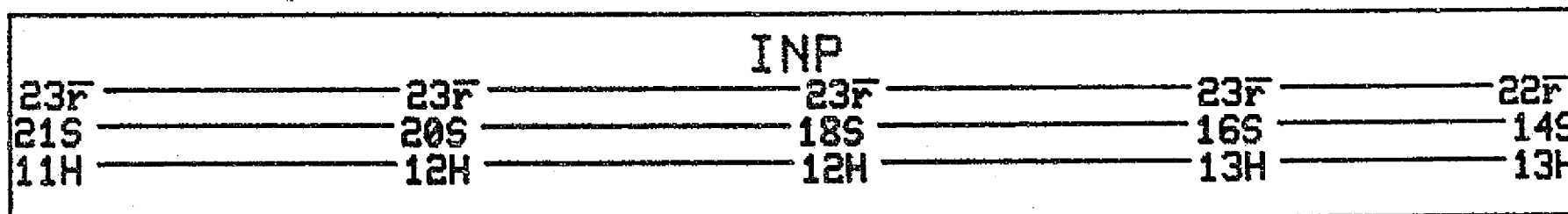
MOON



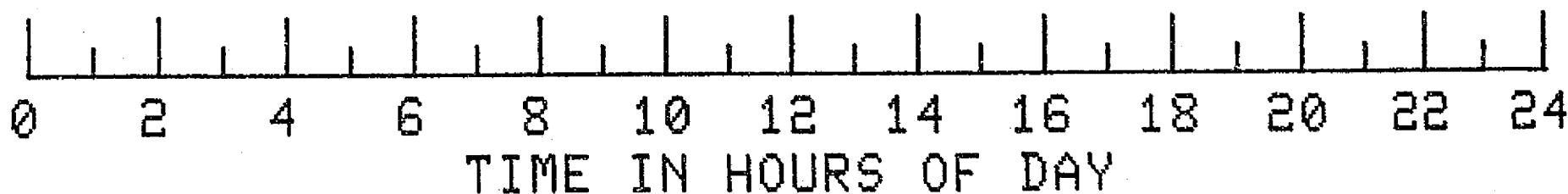
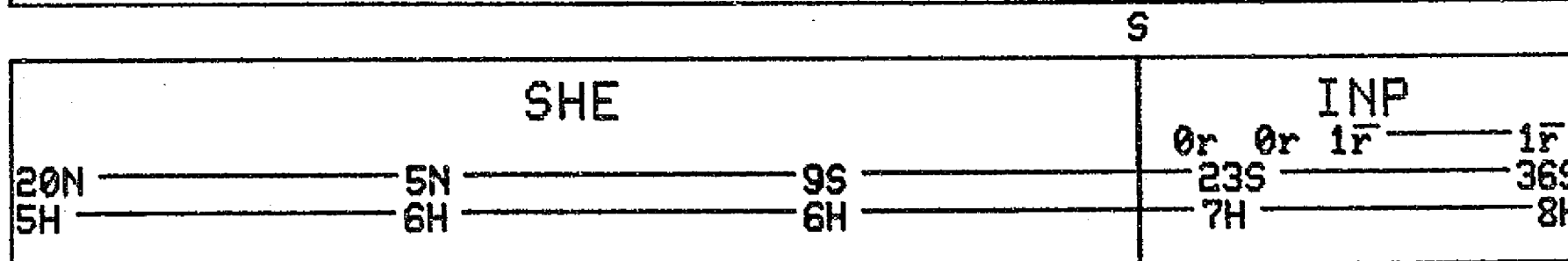
IMP-J



IMP-H

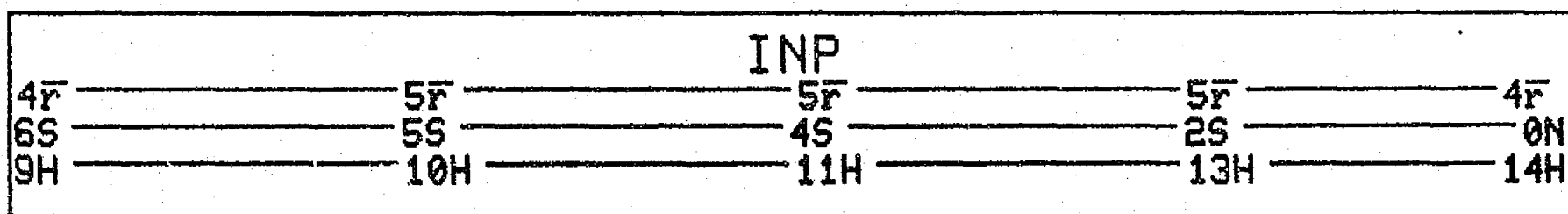


VELA
-5B

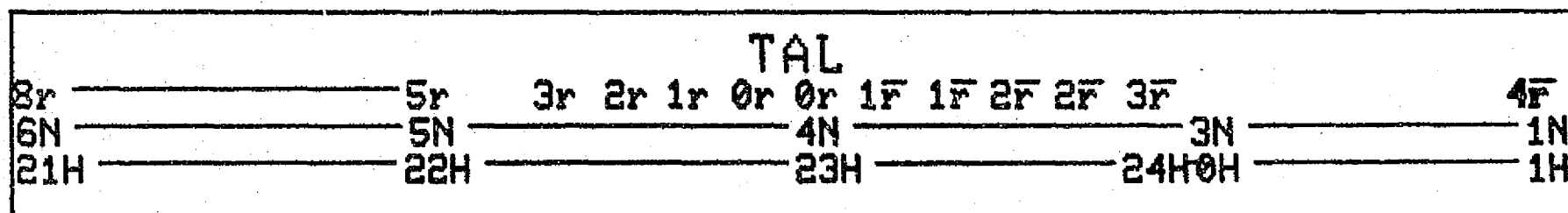


DAY 109 1977

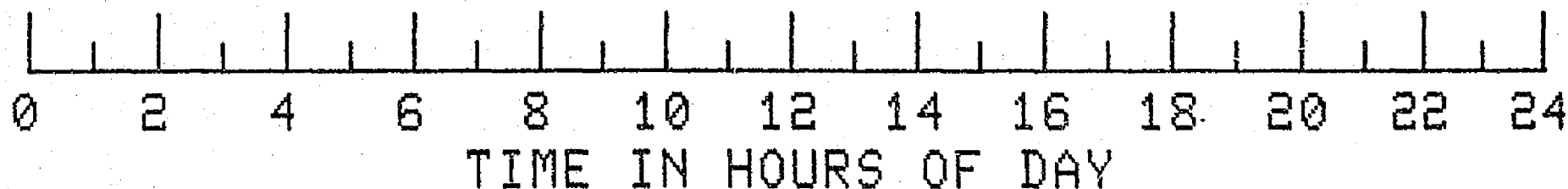
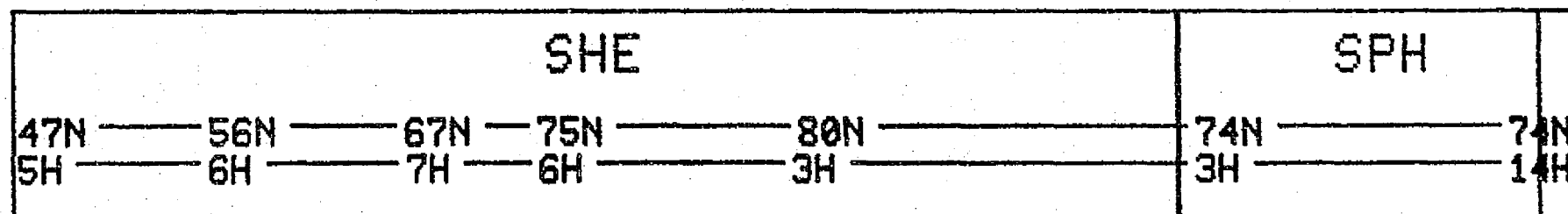
SOL
RAD
-11A



SOL
RAD
-11B

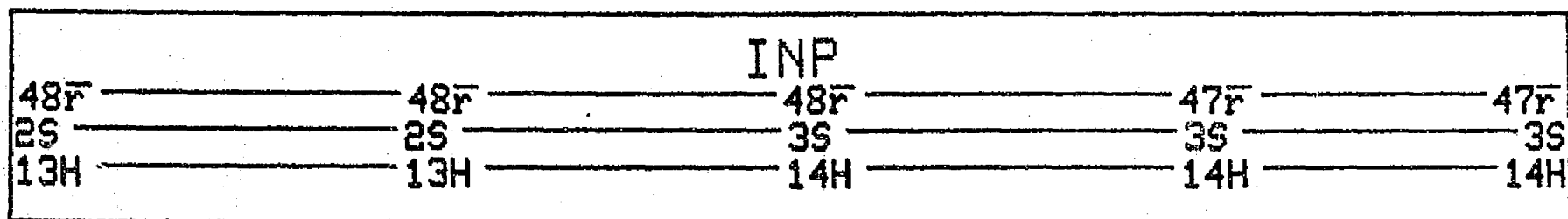


HAWK
EYE-1

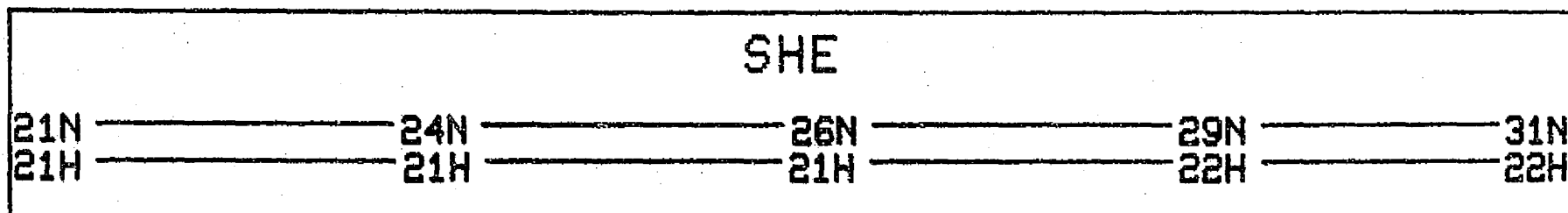


DAY 110 1977

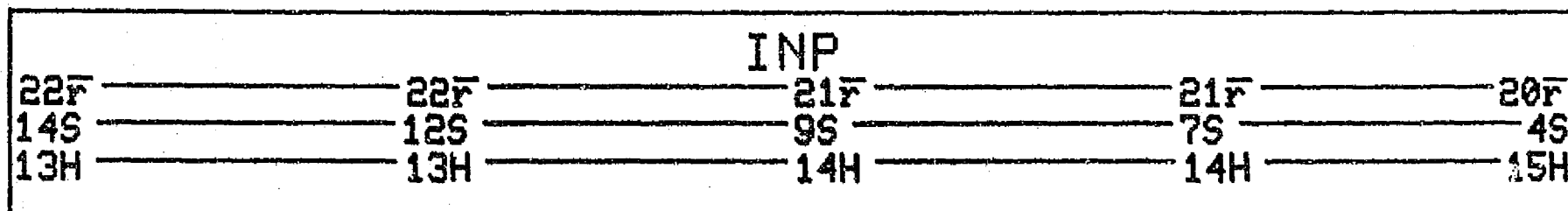
MOON



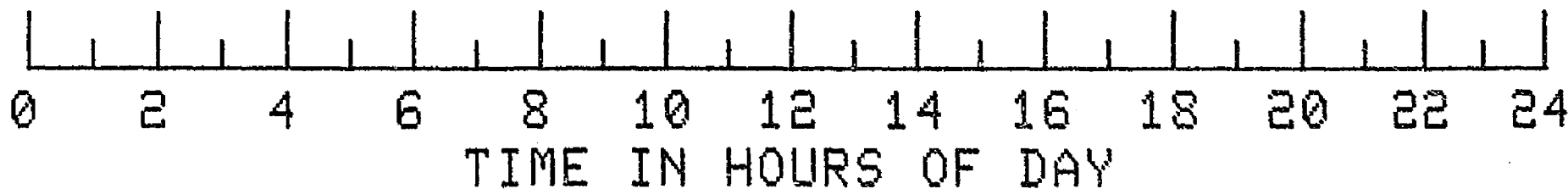
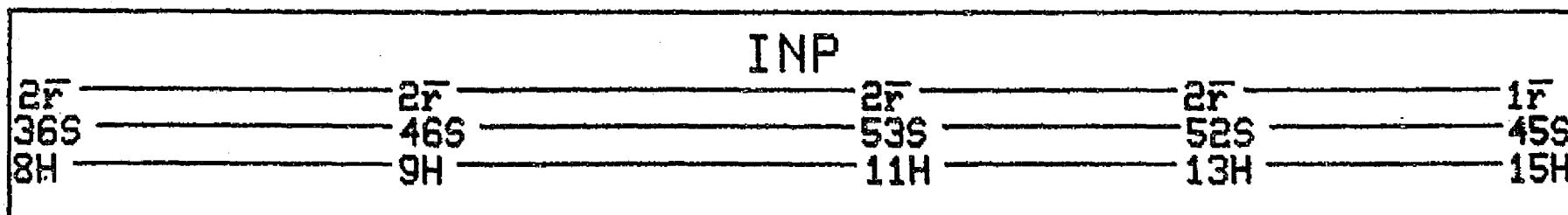
IMP-J



IMP-H



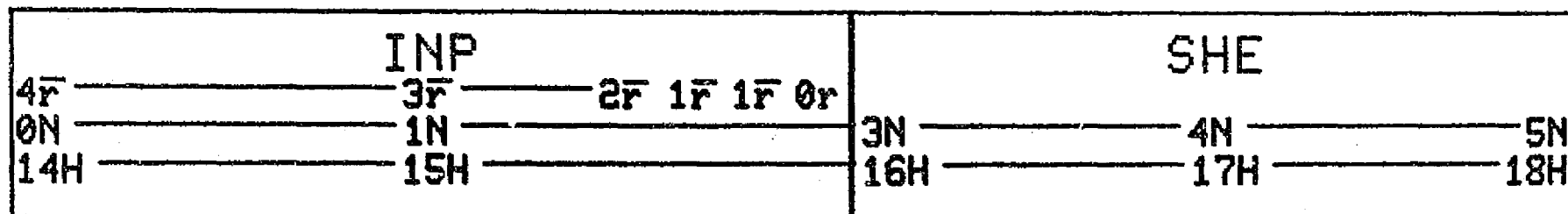
VELA
-5B



DAY 110 1977

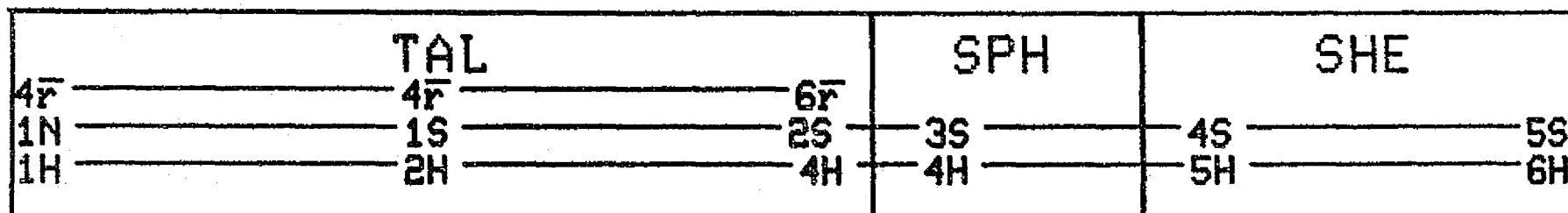
S

SOL
RAD
-11A



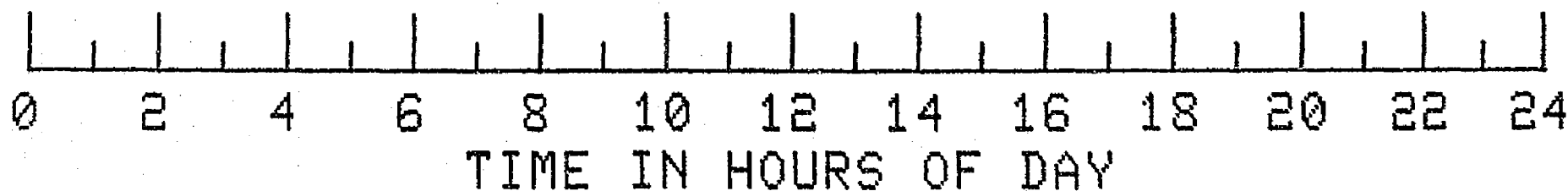
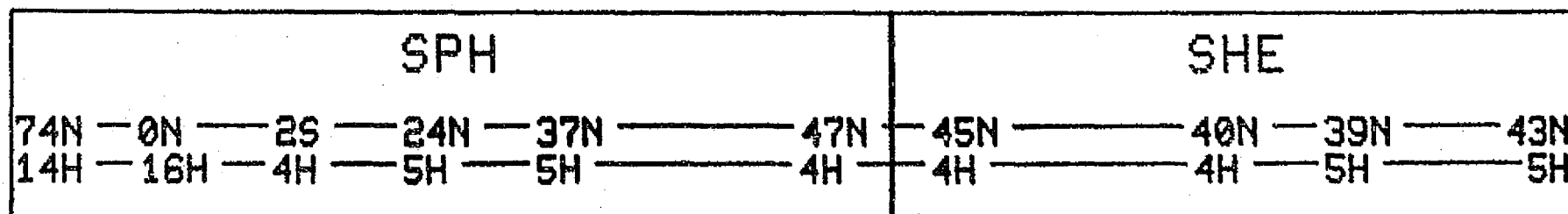
P

SOL
RAD
-11B



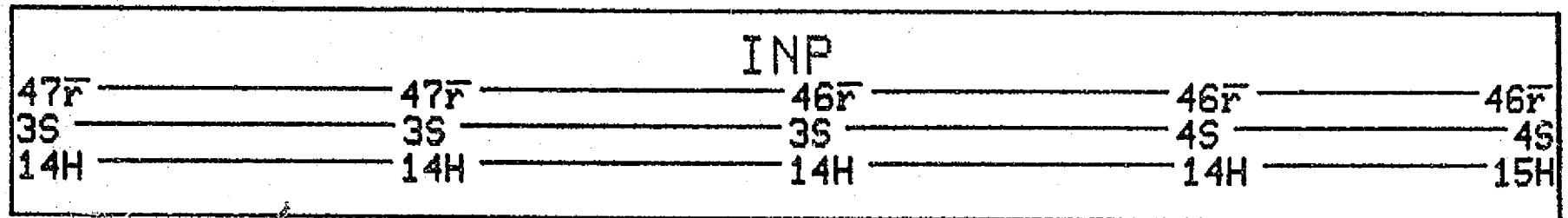
P

HAWK
EYE-1

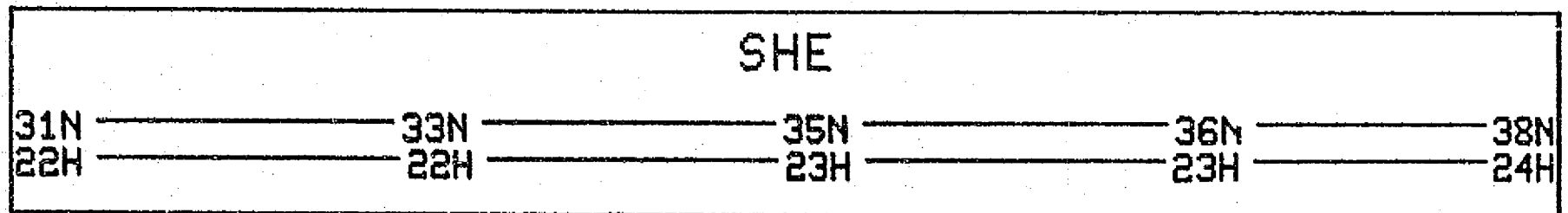


DAY 111 1977

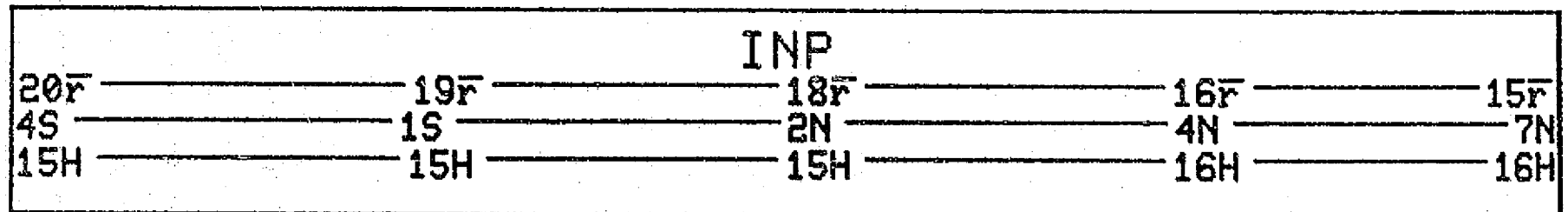
MOON



IMP-J

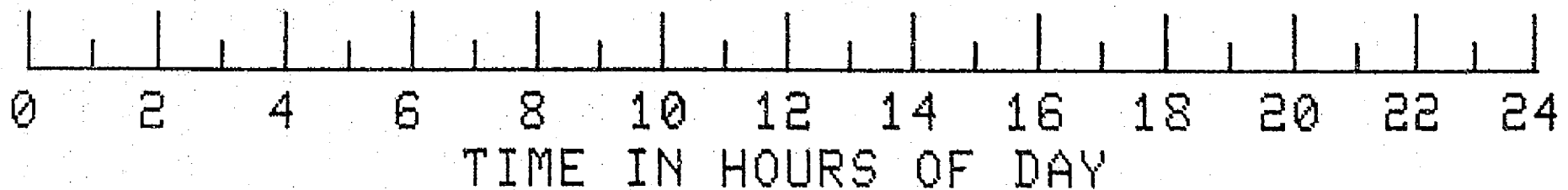
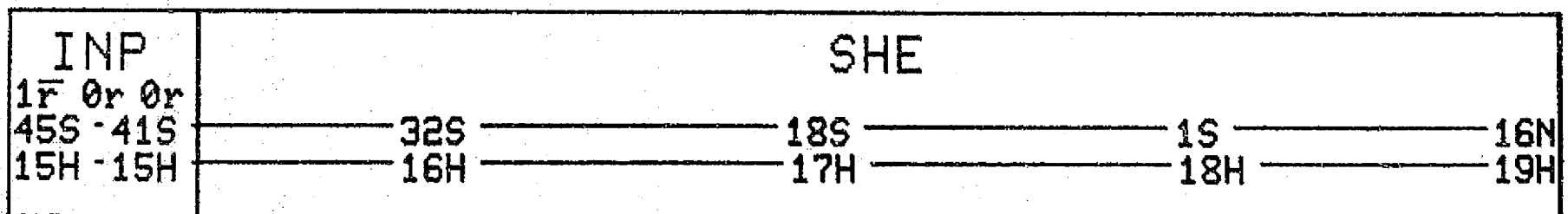


IMP-H

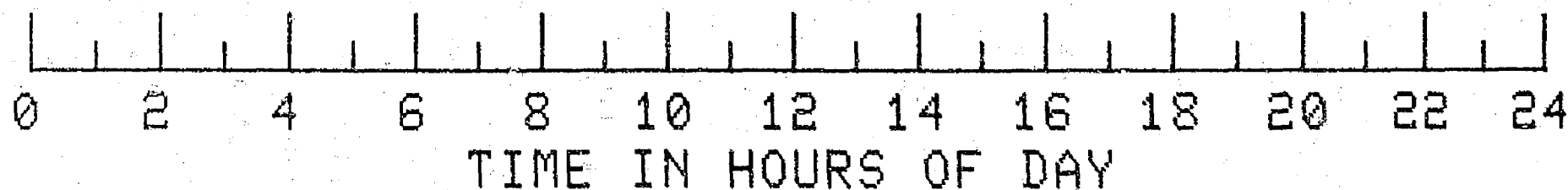
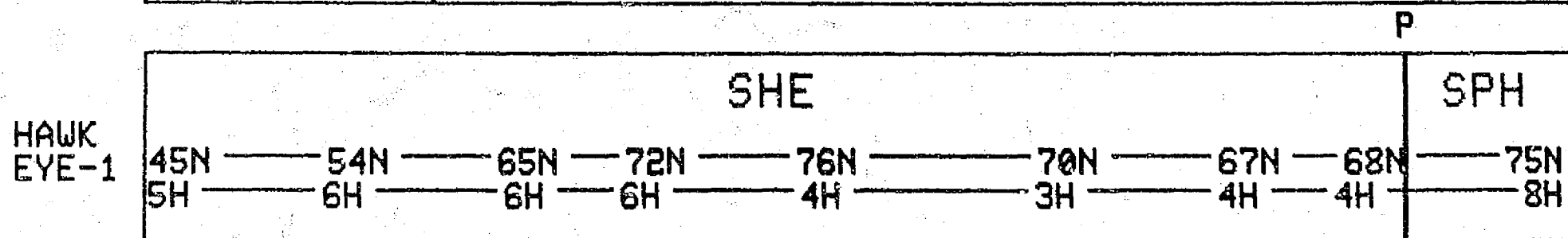
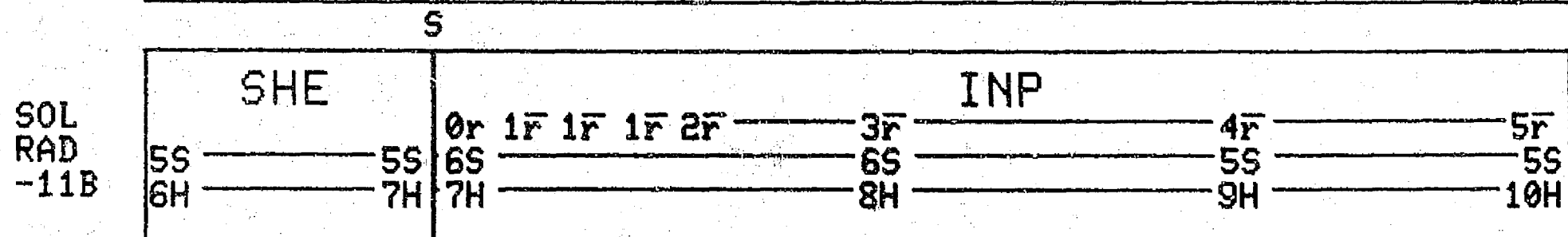
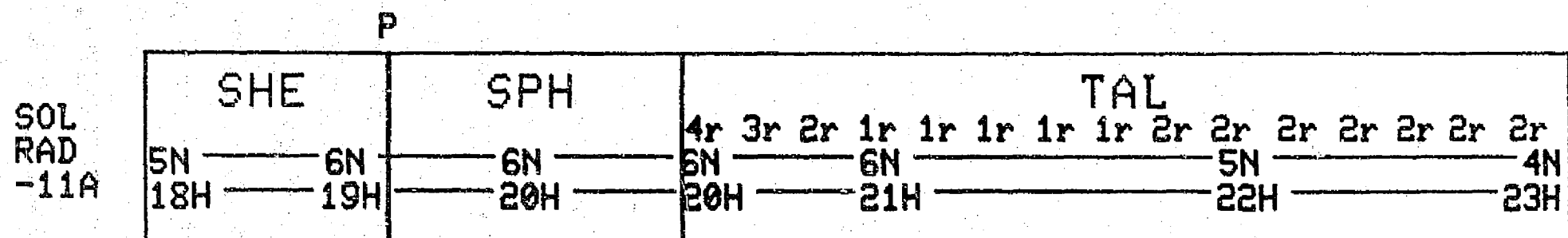


S

VELA
-5B

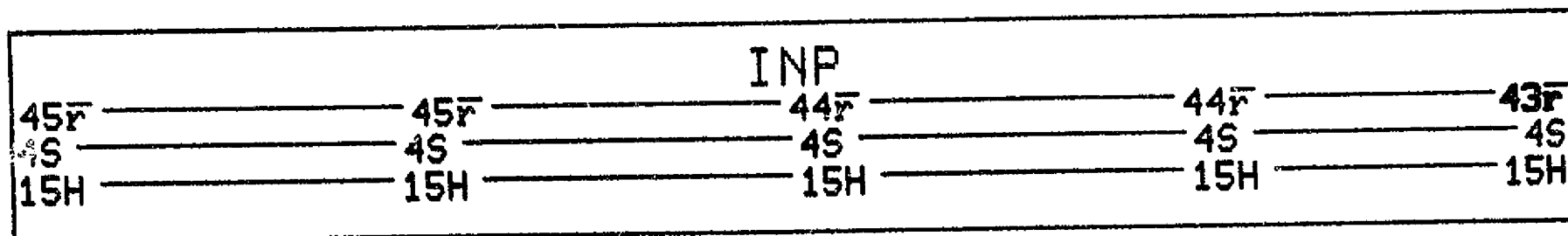


DAY 111 1977

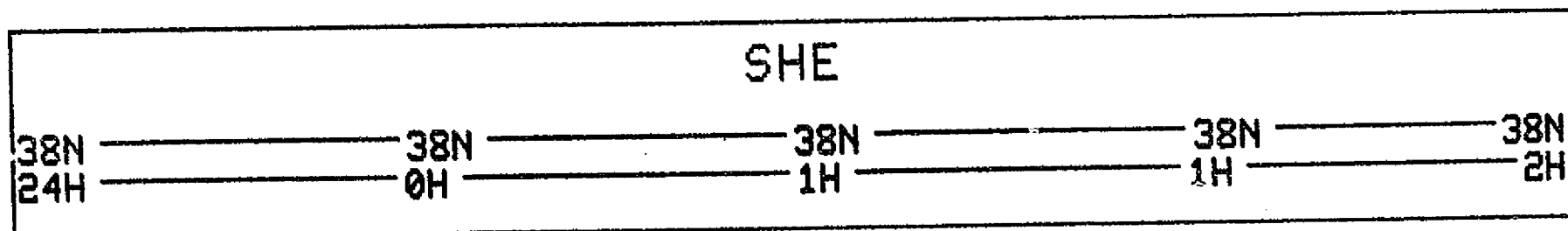


DAY 112 1977

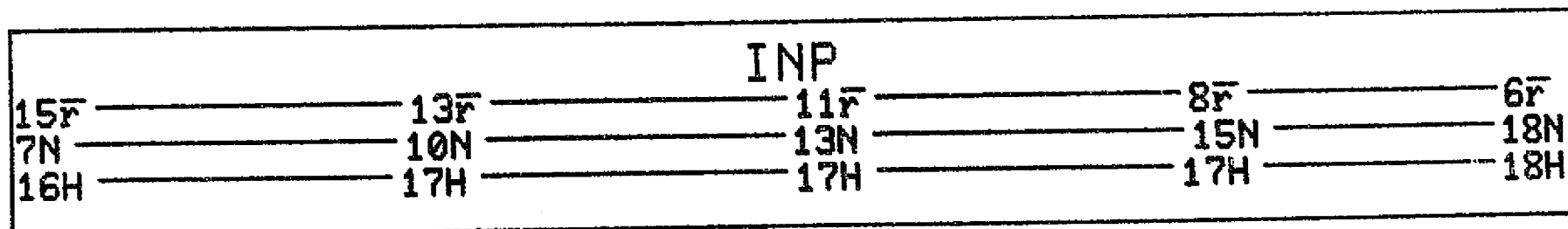
MOON



IMP-J

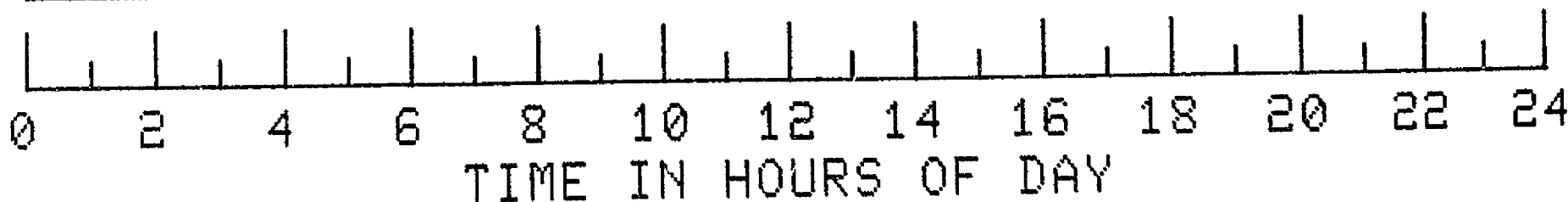
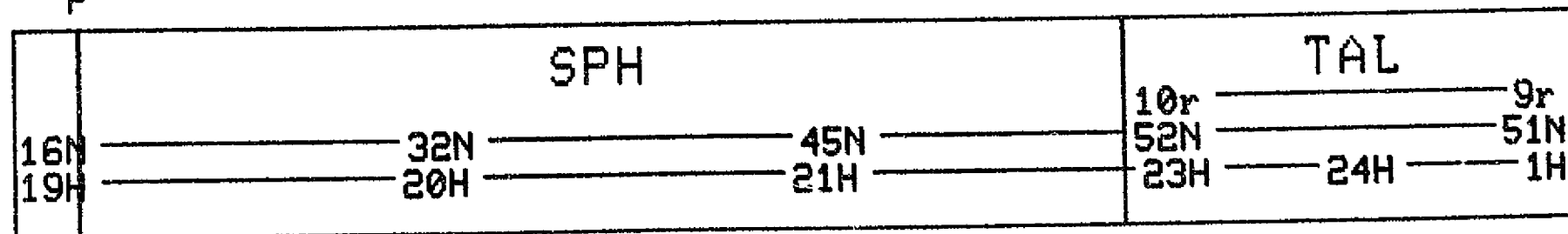


IMP-H



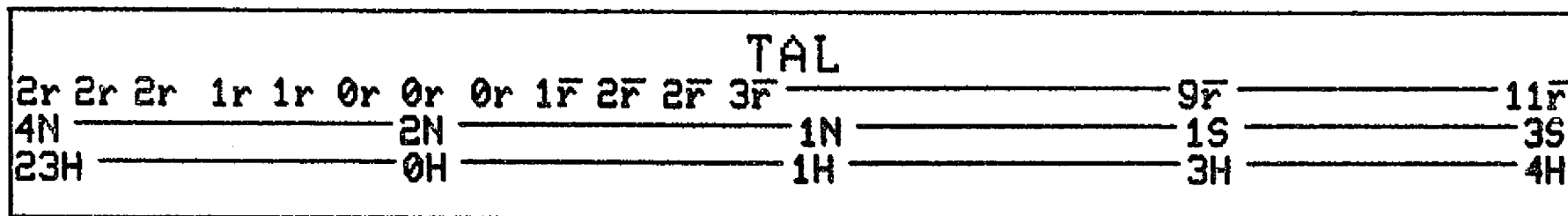
P

VELA
-5B

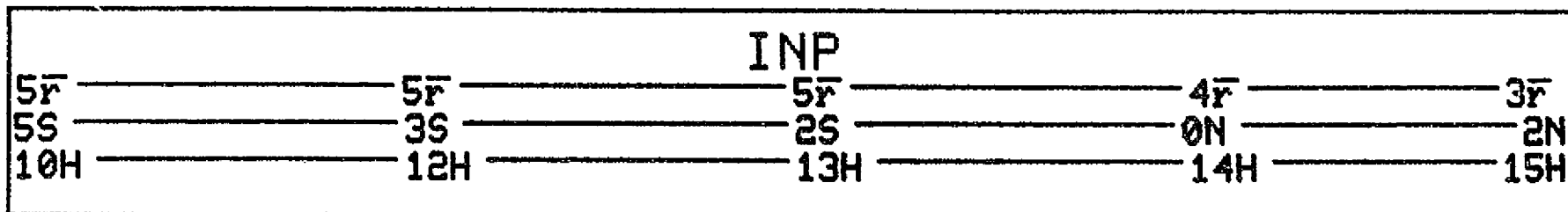


DAY 112 1977

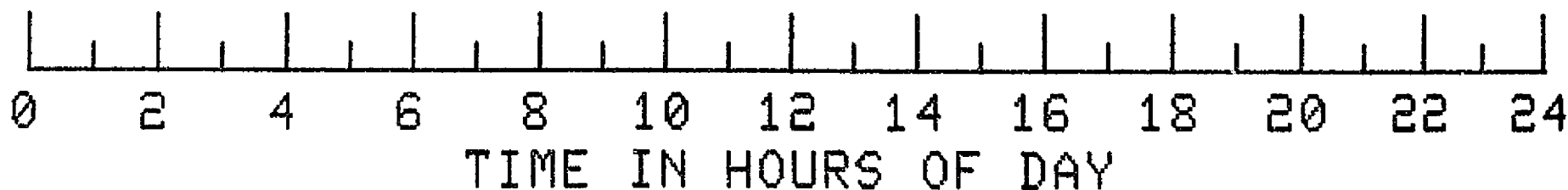
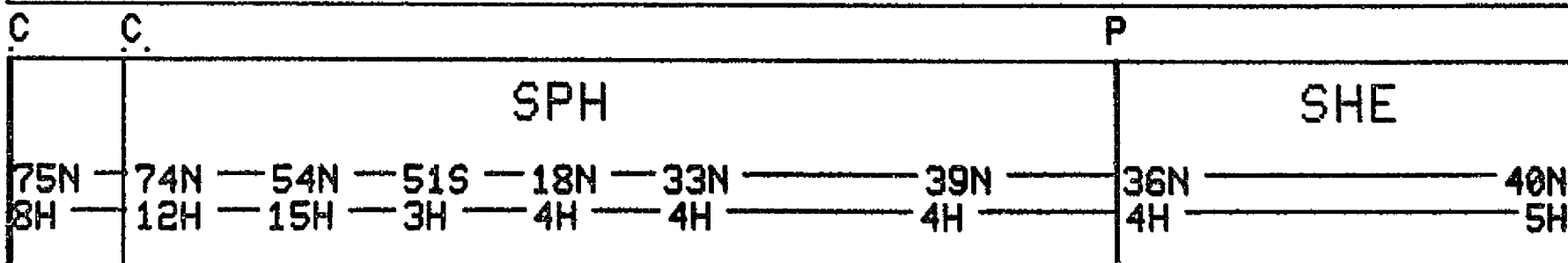
SOL
RAD
-11A



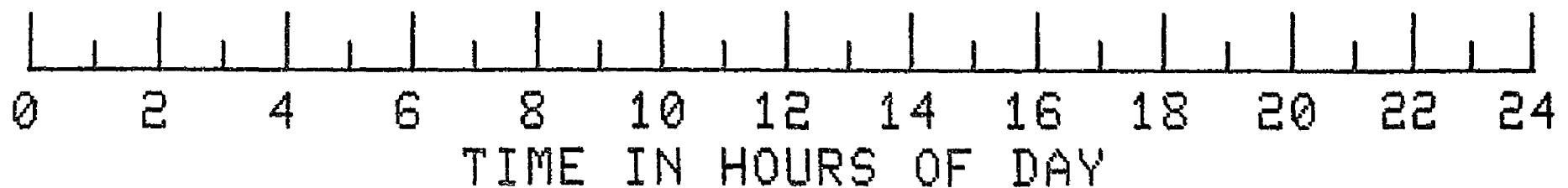
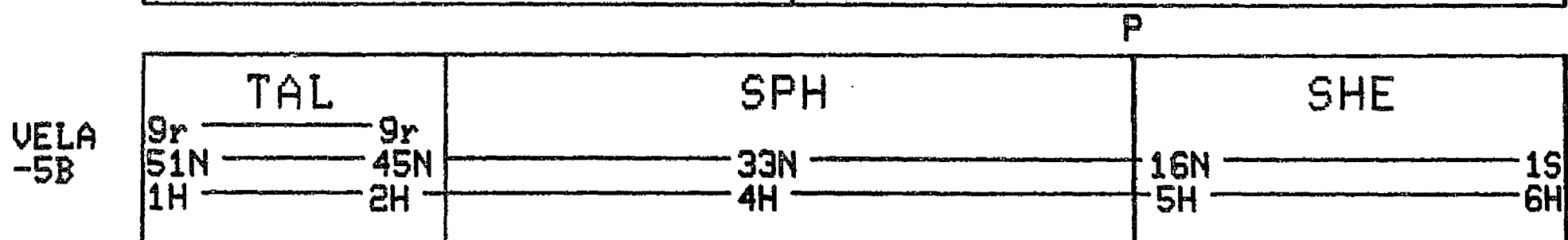
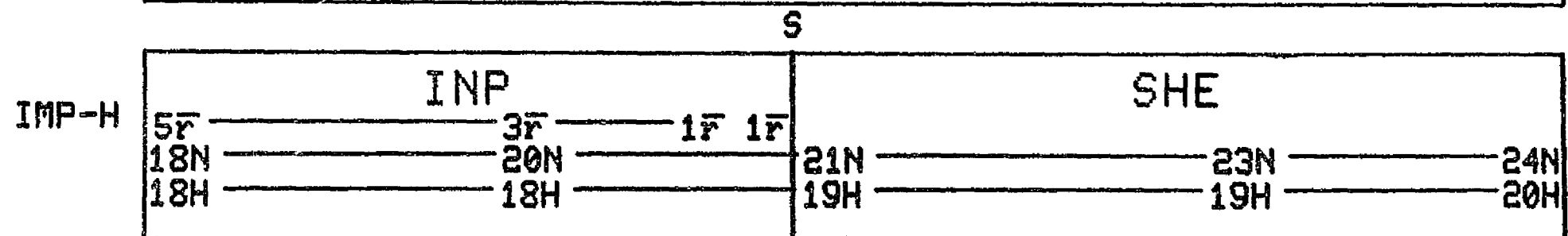
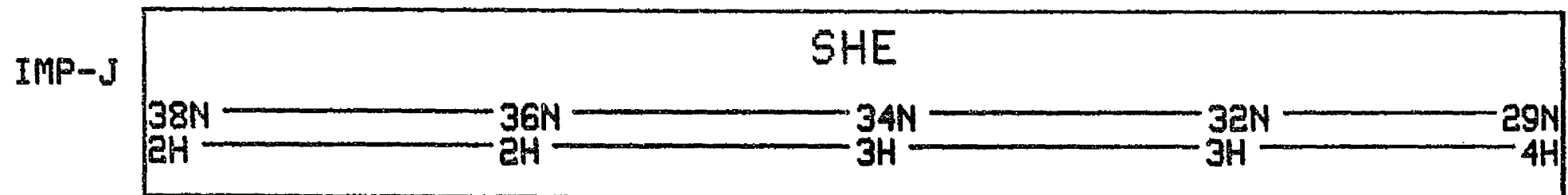
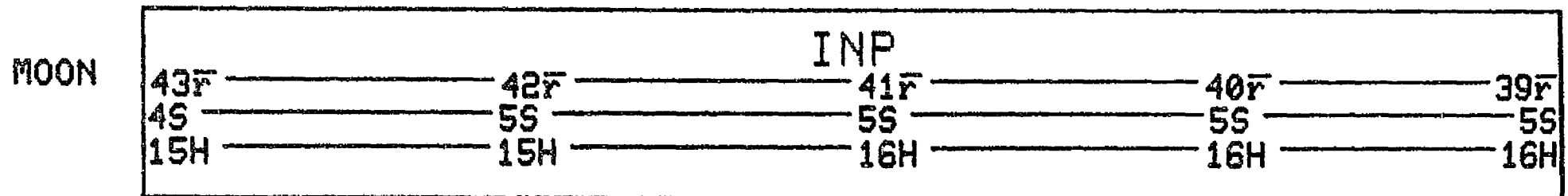
SOL
RAD
-11B



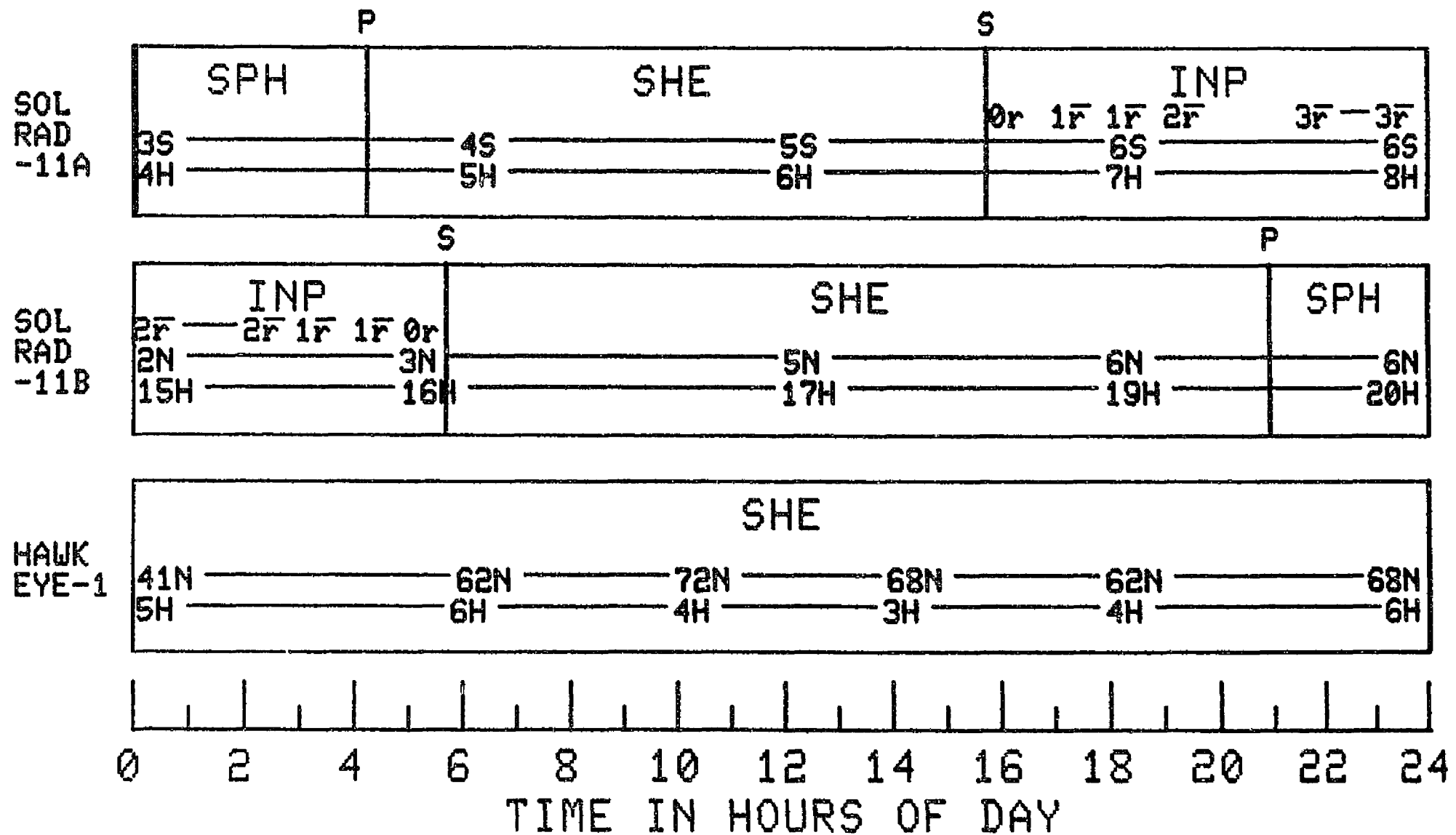
HAWK
EYE-1



DAY 113 1977

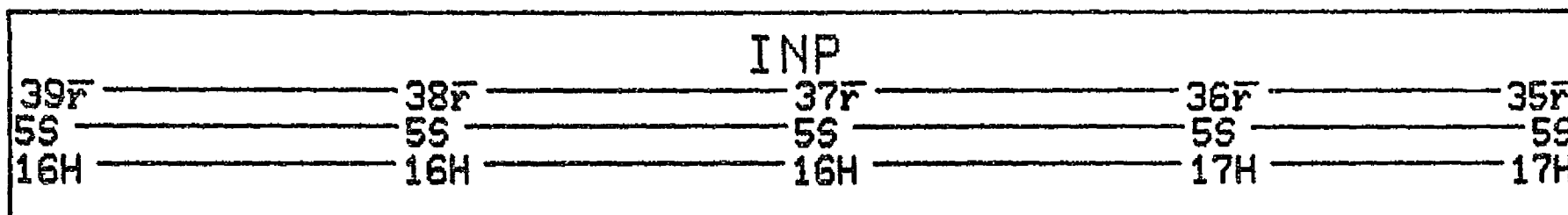


DAY 113 1977



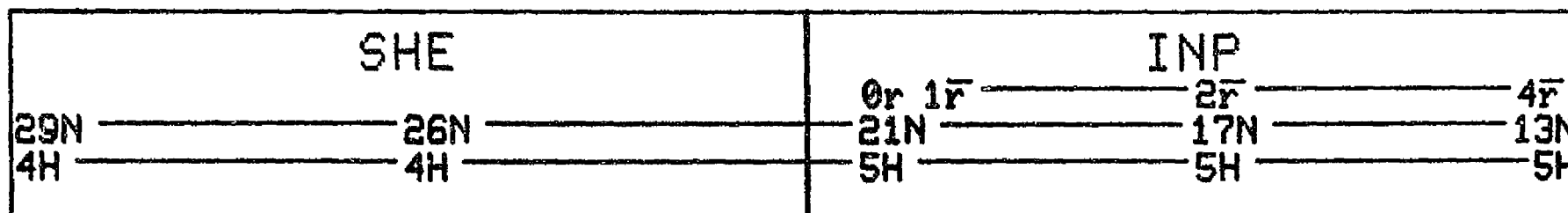
DAY 114 1977

MOON



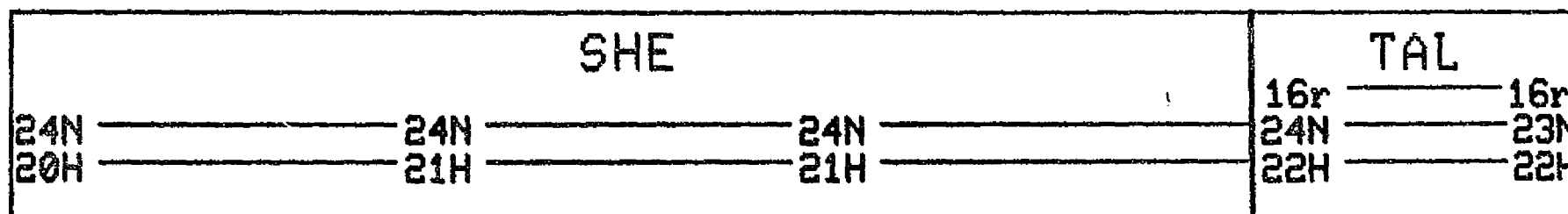
S

IMP-J



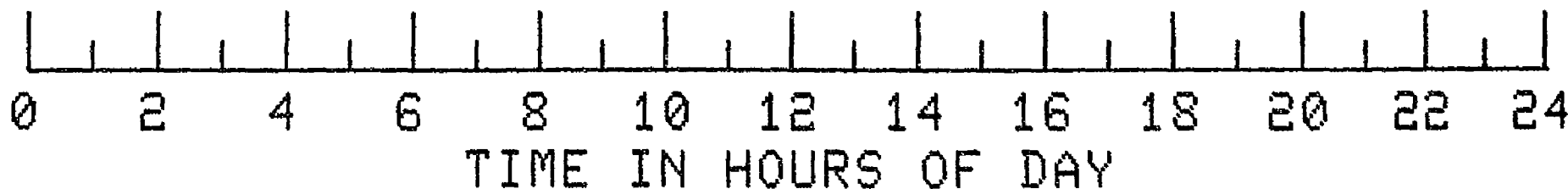
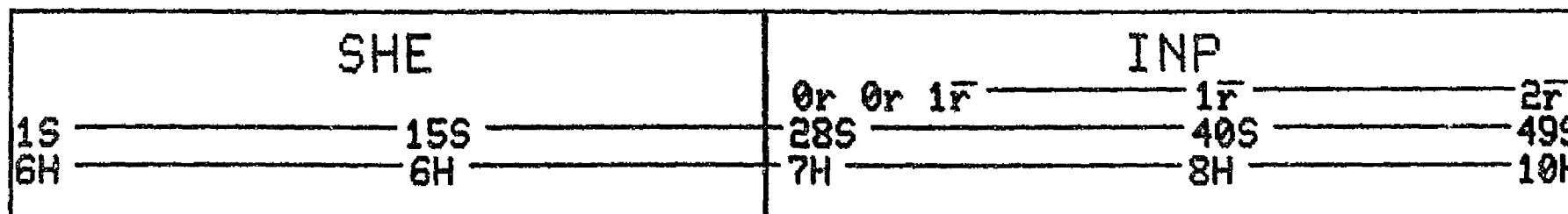
P

IMP-H



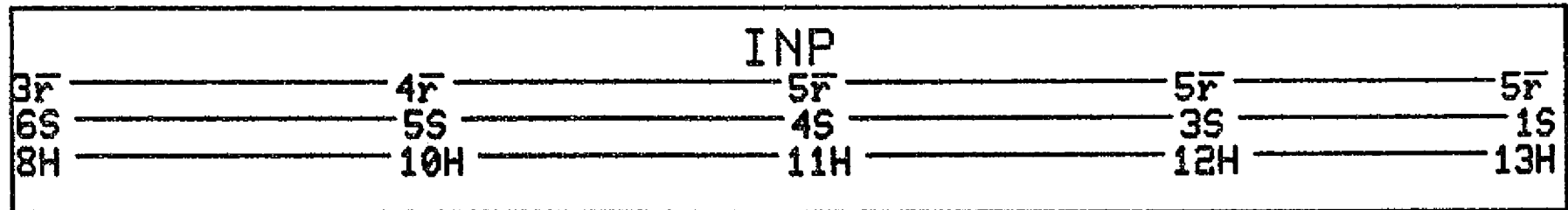
S

VELA
-5B

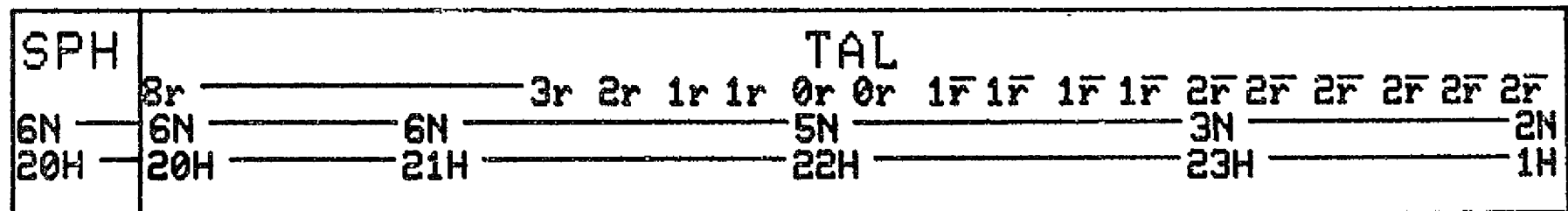


DAY 114 1977

SOL
RAD
-11A



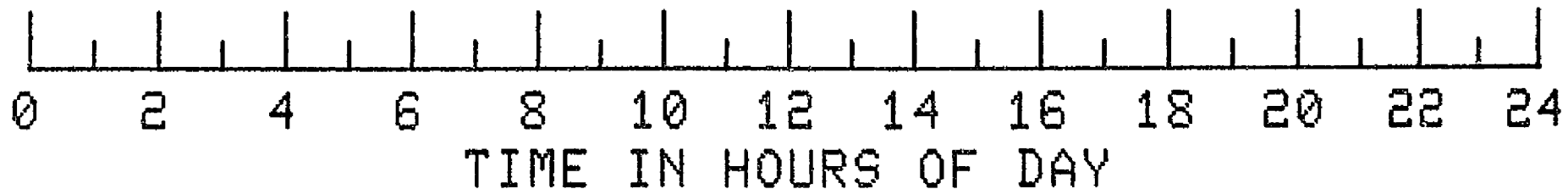
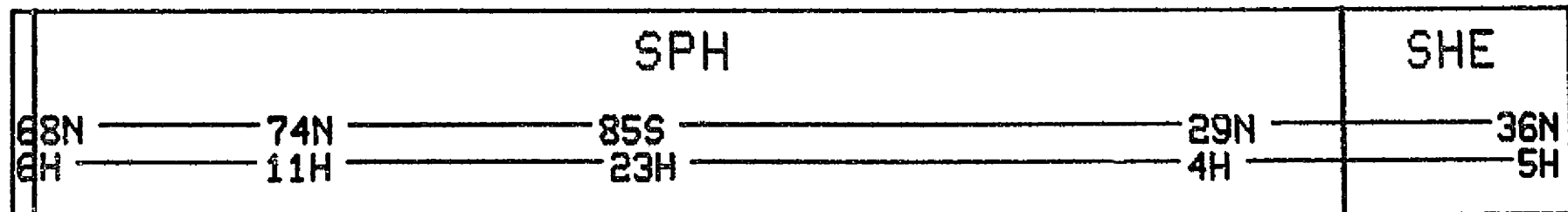
SOL
RAD
-11B



P

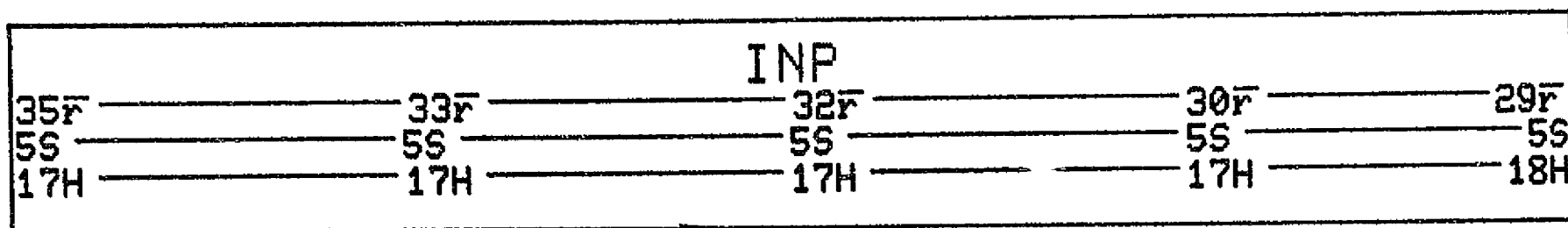
P

HAWK
EYE-1

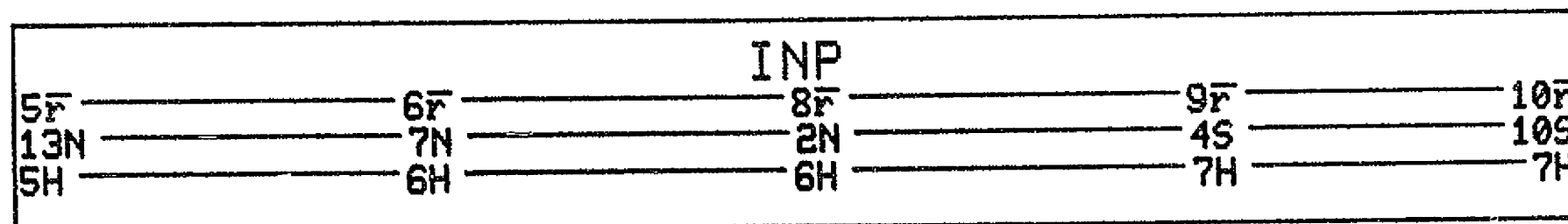


DAY 115 1977

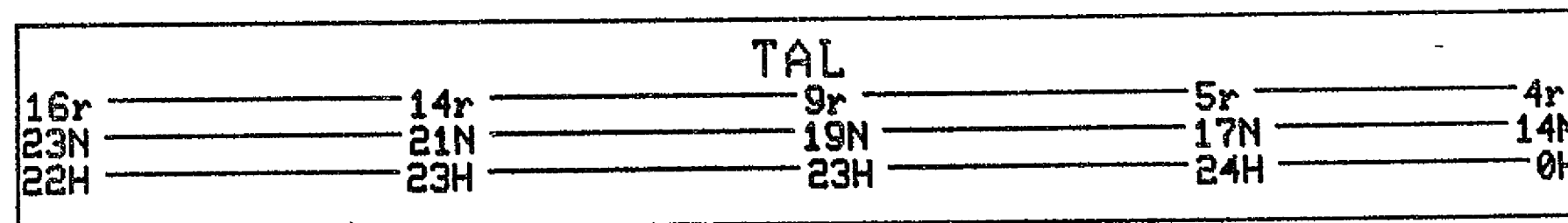
MOON



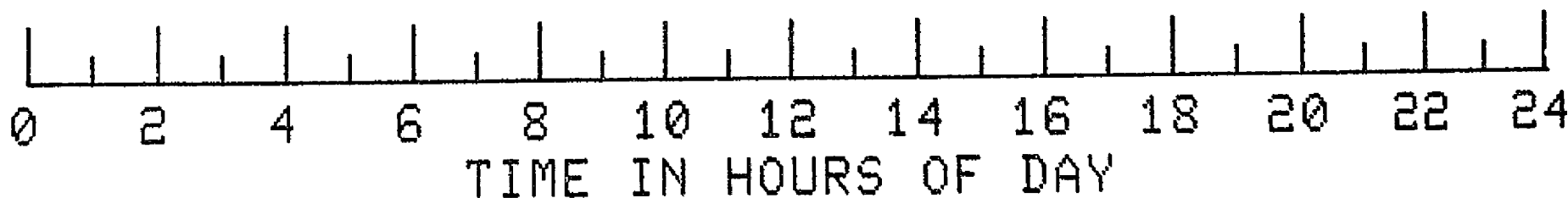
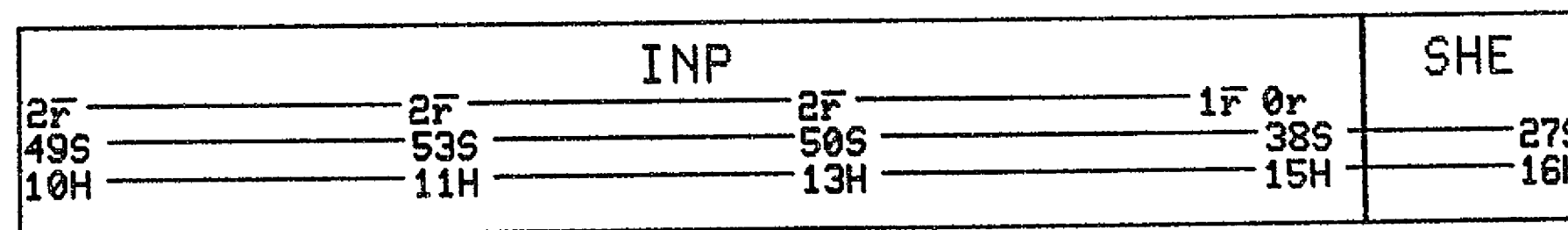
IMP-J



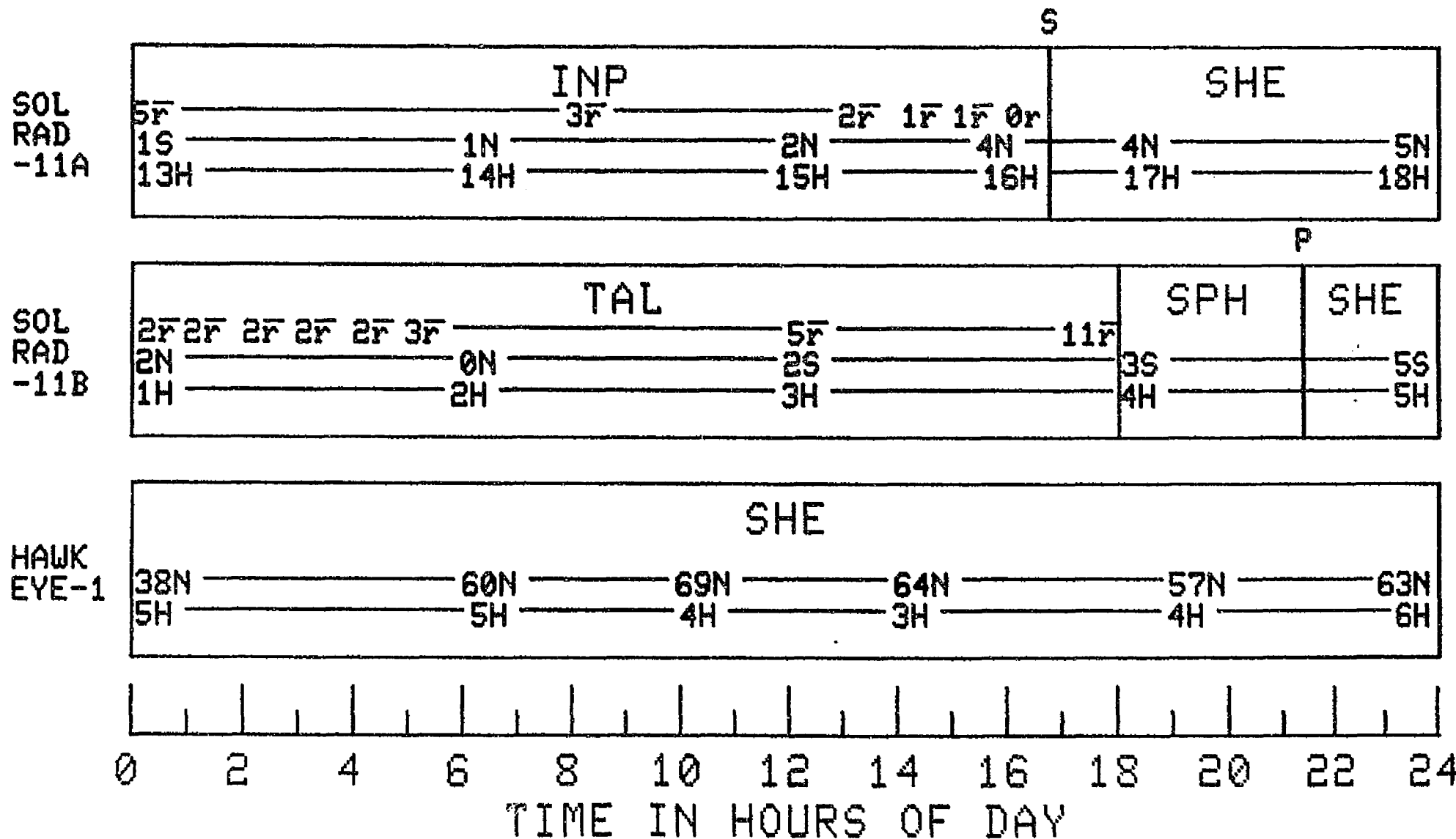
IMP-H



VELA
-5B

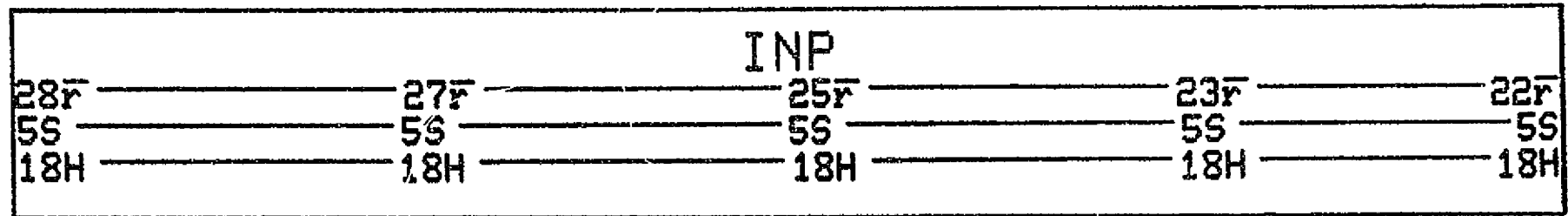


DAY 115 1977

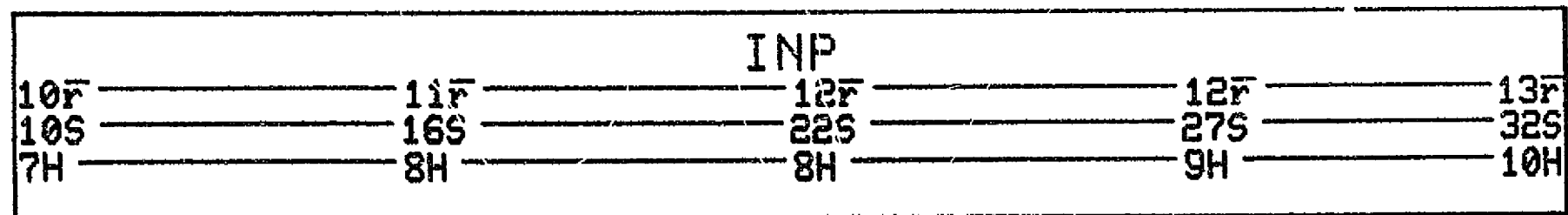


DAY 116 1977

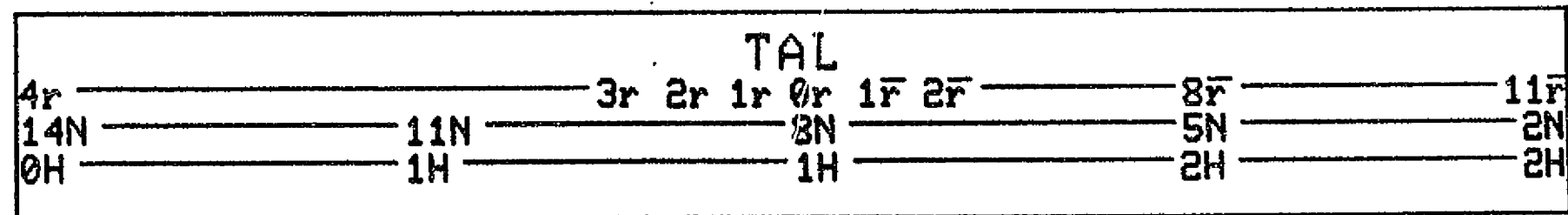
MOON



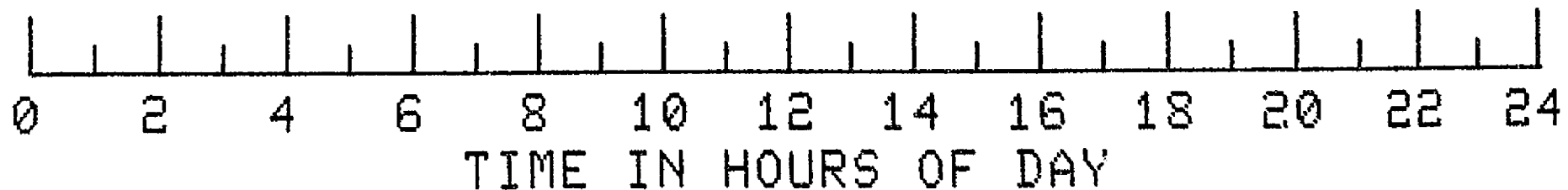
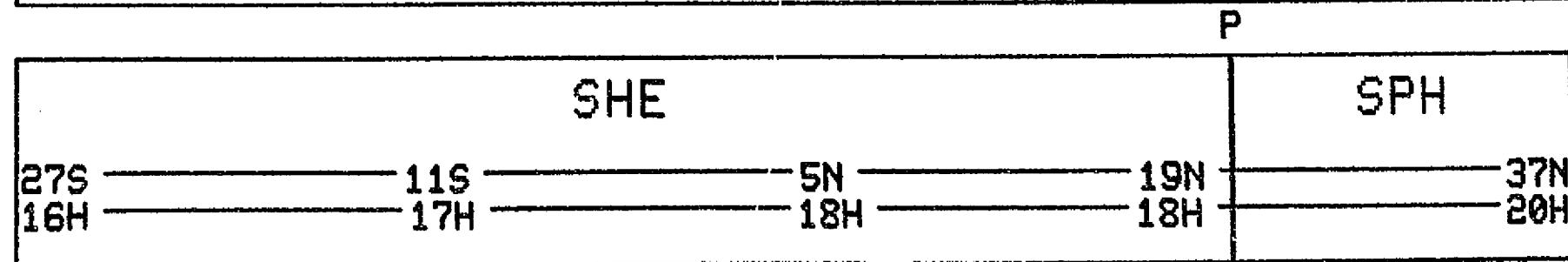
IMP-J



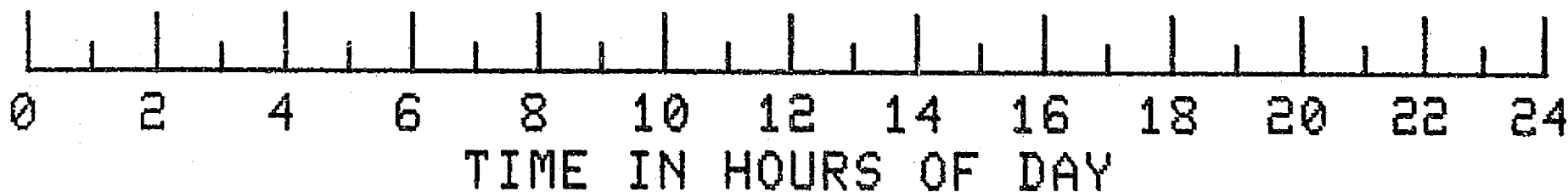
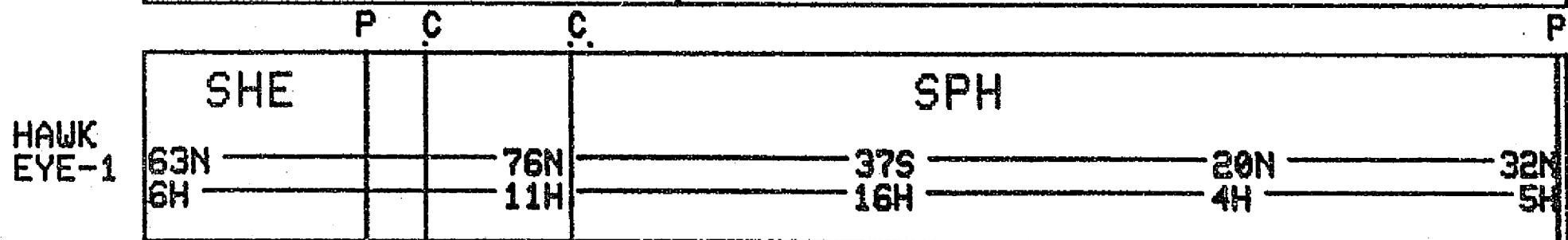
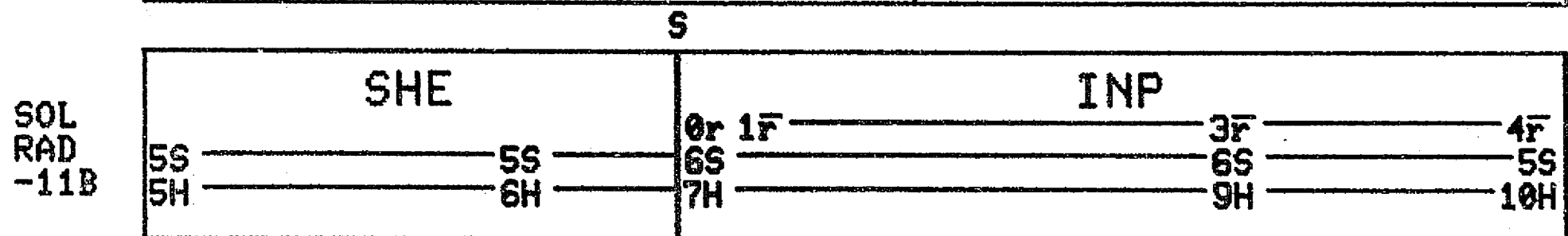
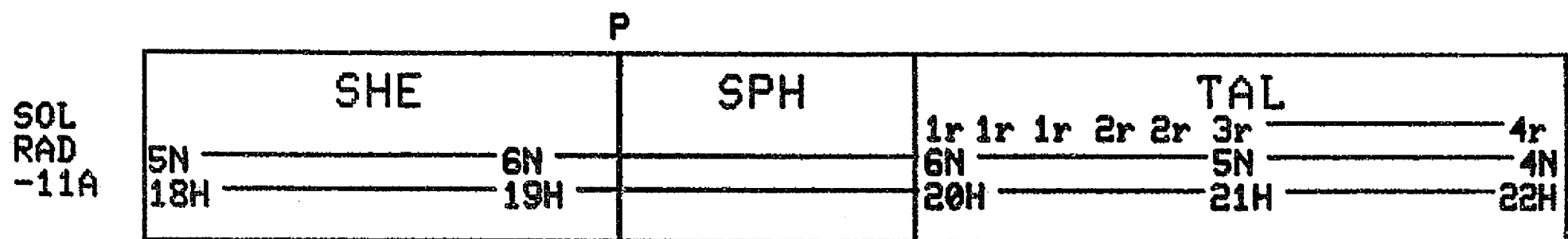
IMP-H



VELA
-5B

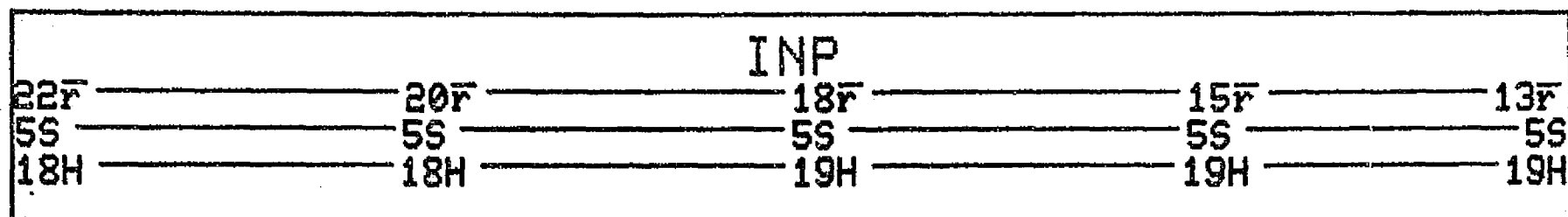


DAY 116 1977

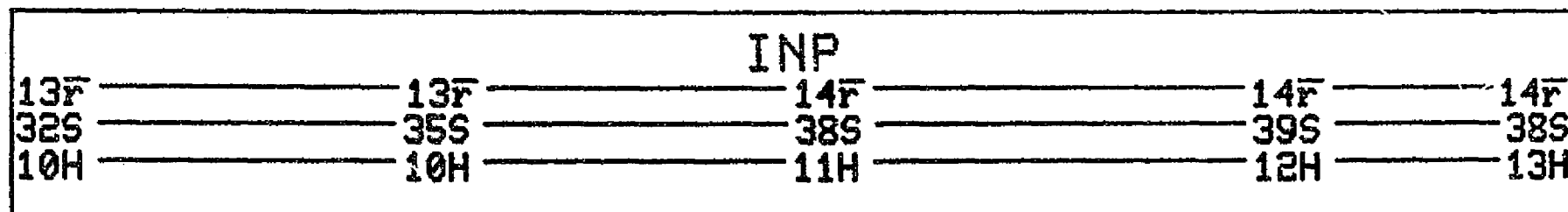


DAY 117 1977

MOON

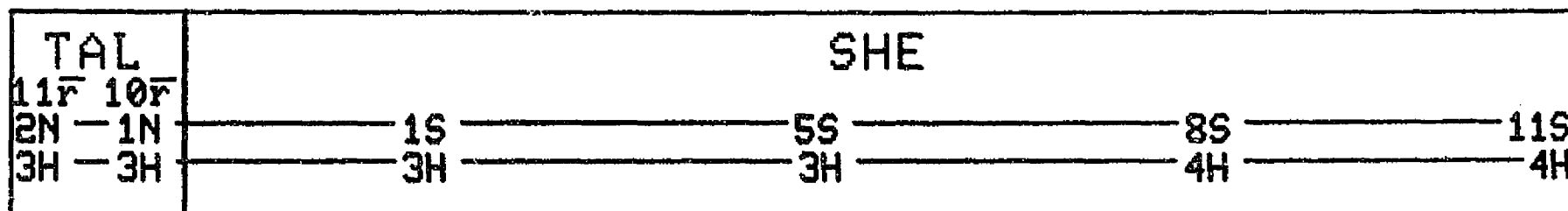


IMP-J

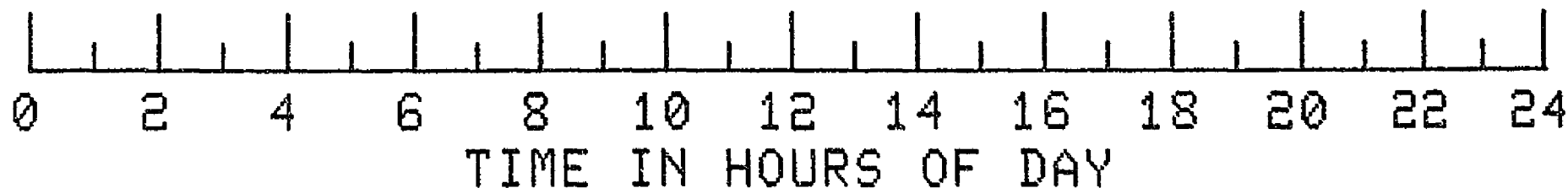
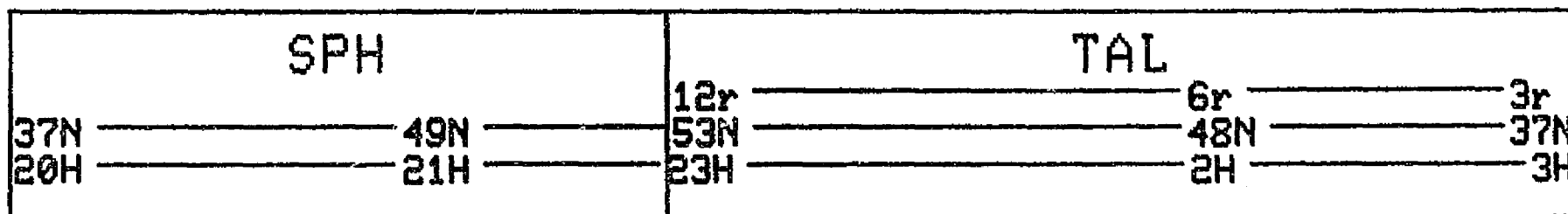


P

IMP-H

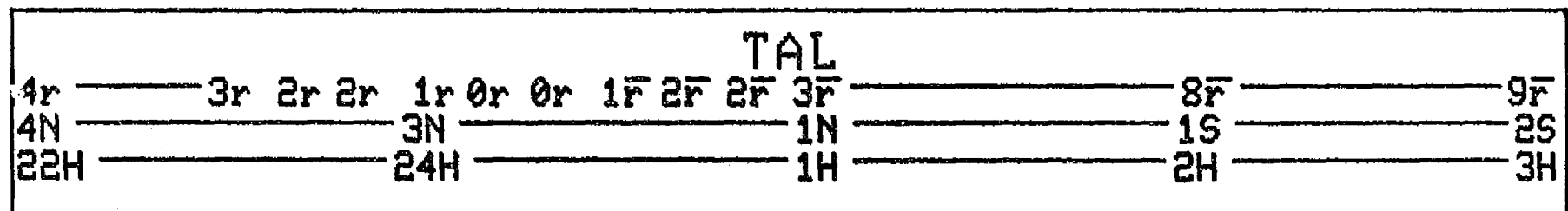


VELA
-5B

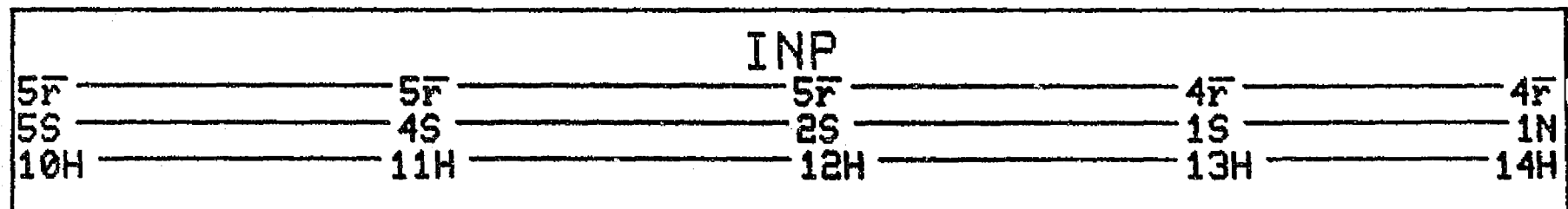


DAY 117 1977

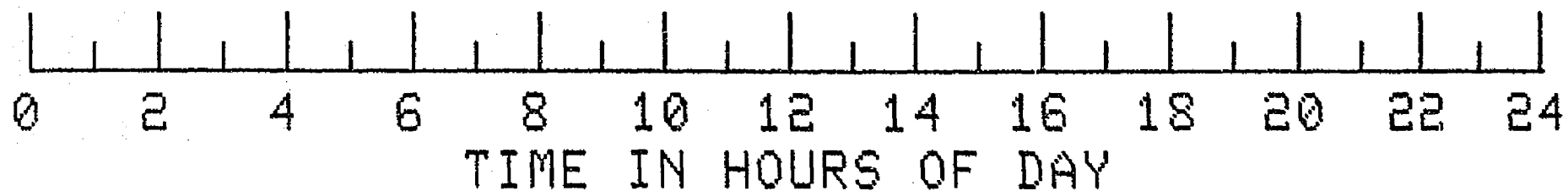
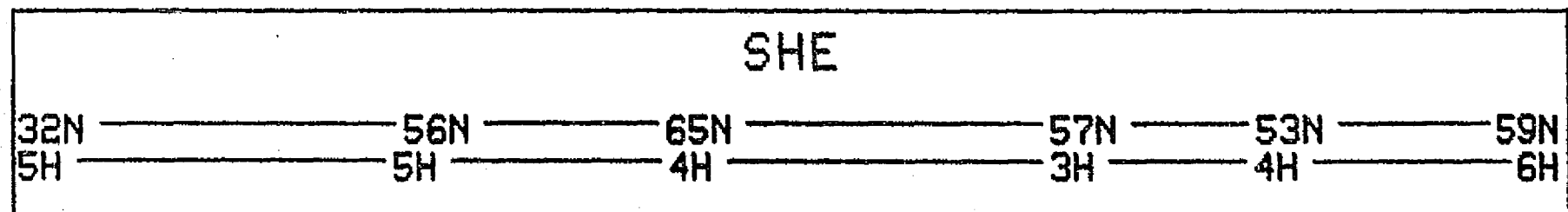
SOL
RAD
-11A



SOL
RAD
-11B

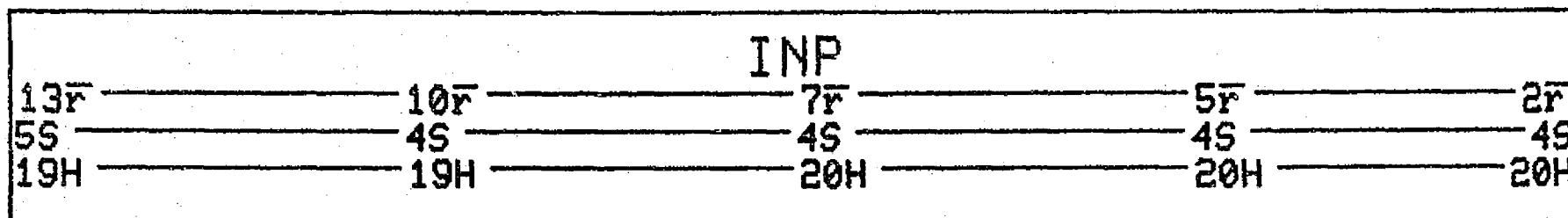


HAWK
EYE-1

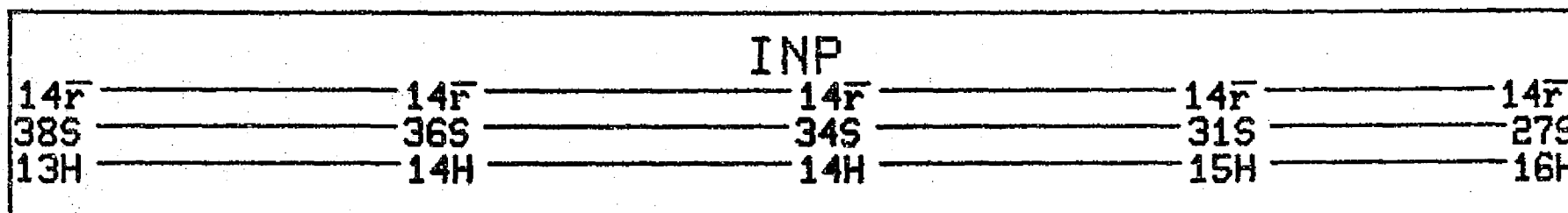


DAY 118 1977

MOON

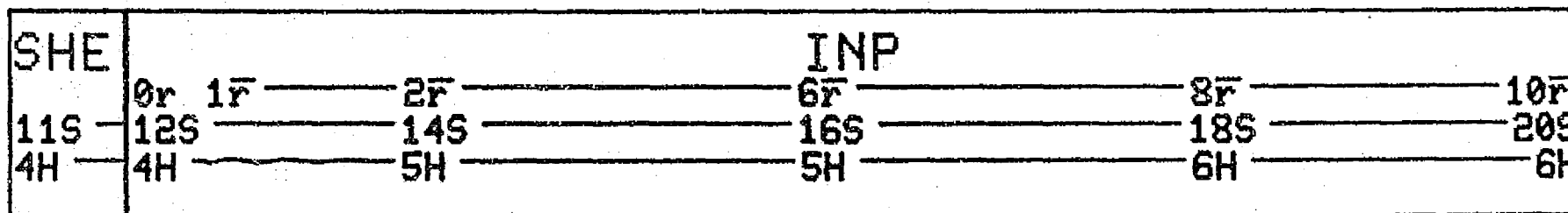


IMP-J



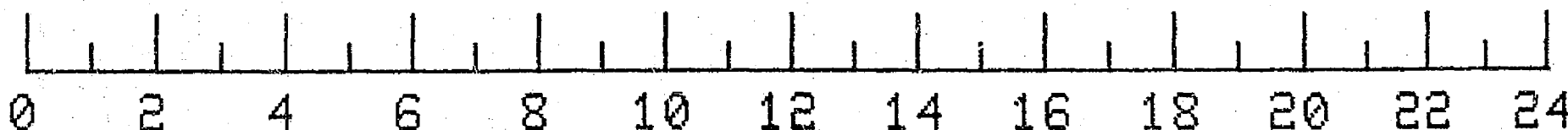
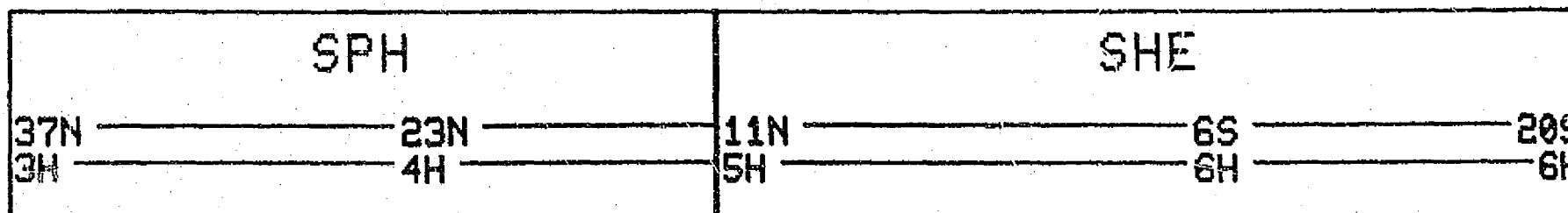
S

IMP-H



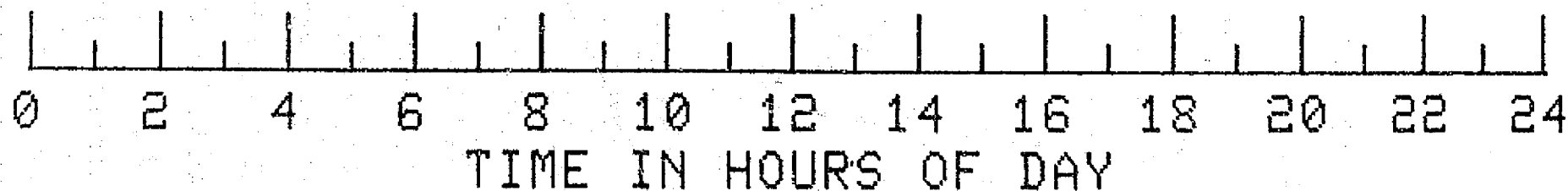
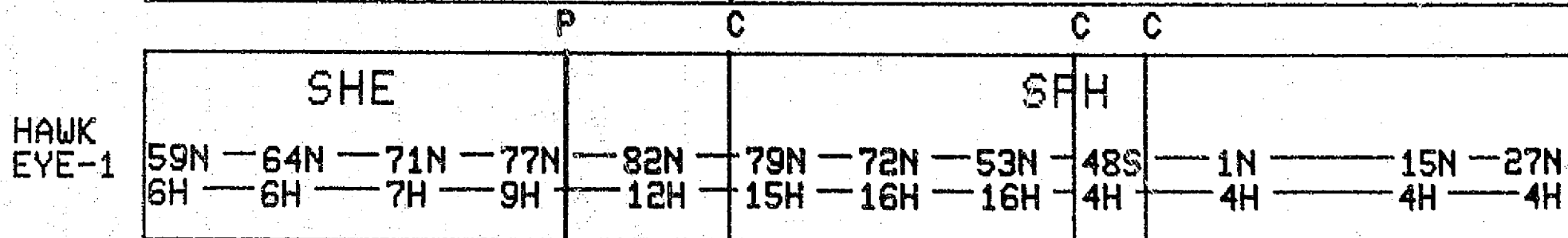
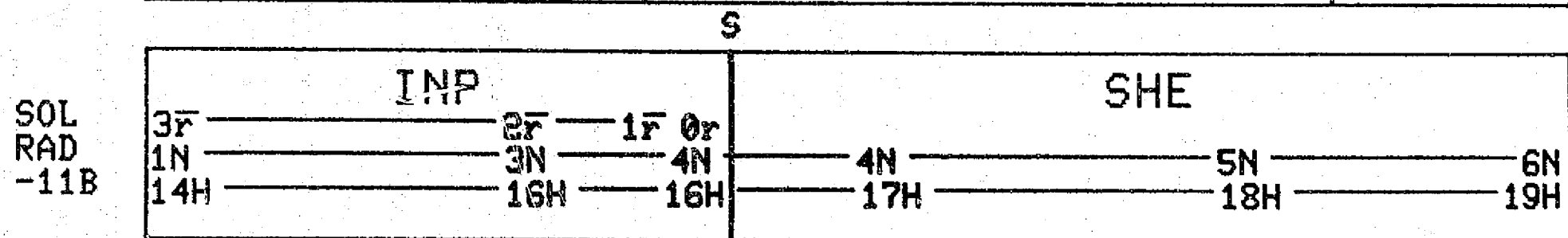
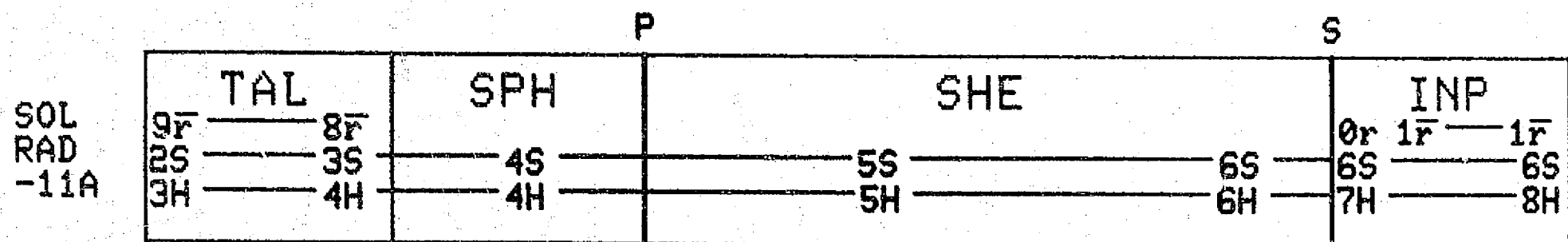
P

VELA
-5B



TIME IN HOURS OF DAY

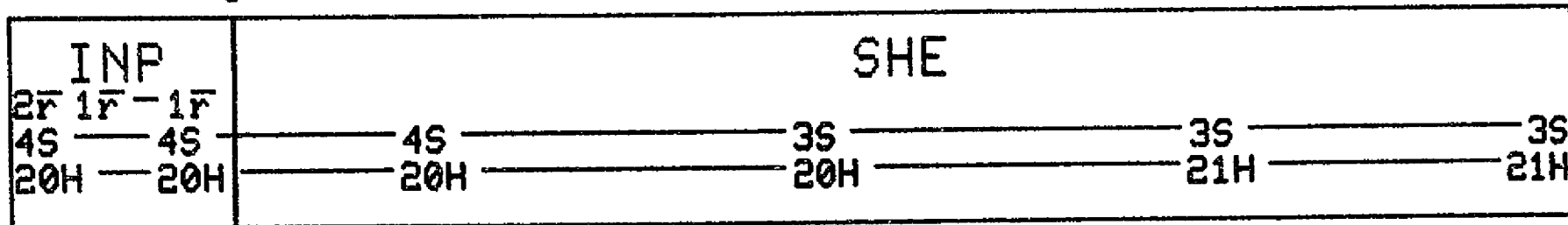
DAY 118 1977



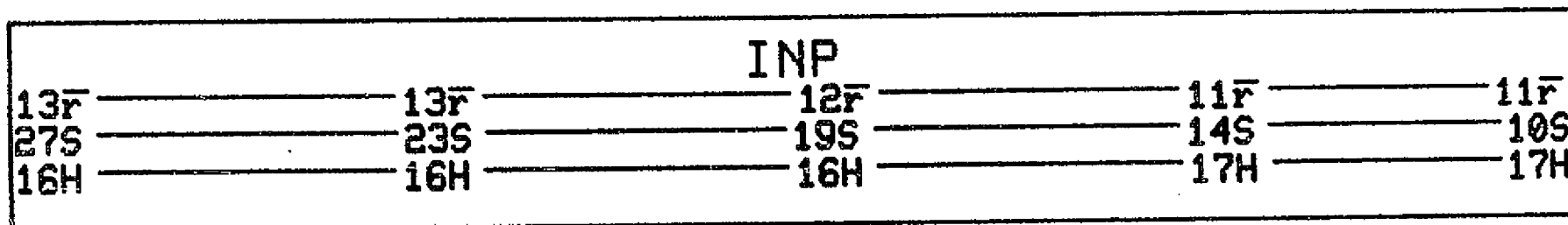
DAY 119 1977

S

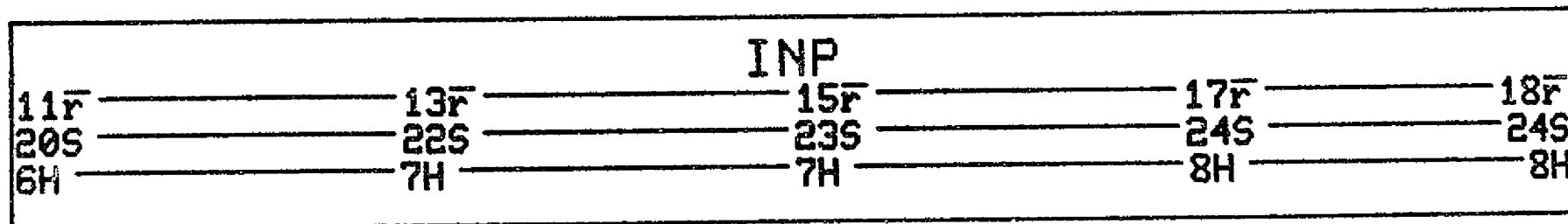
MOON



IMP-J

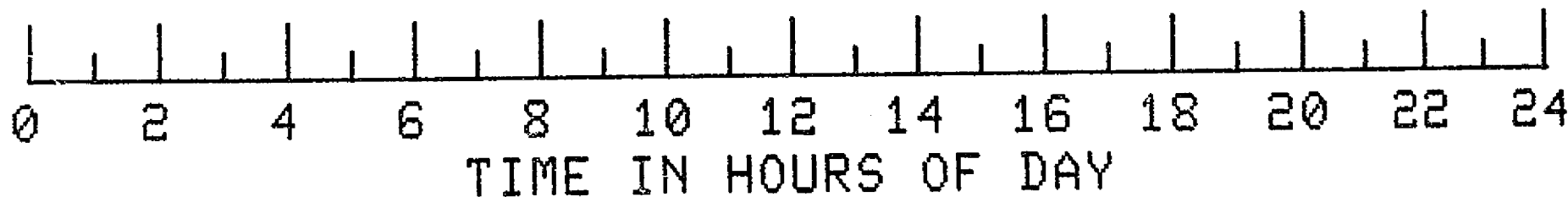
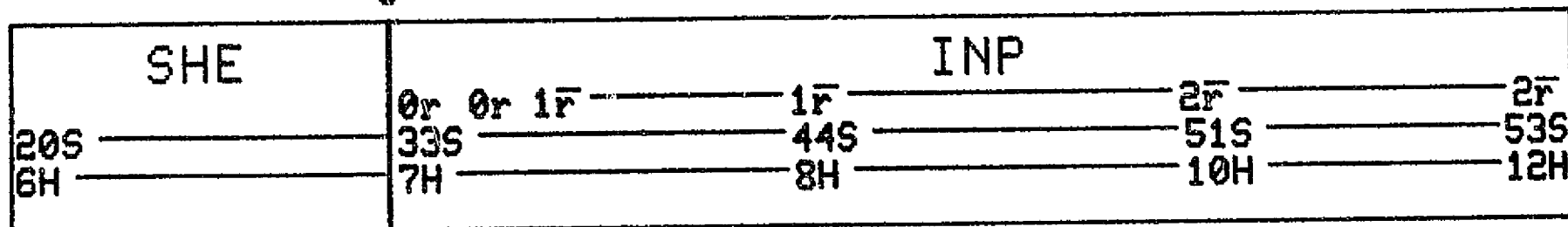


IMP-H



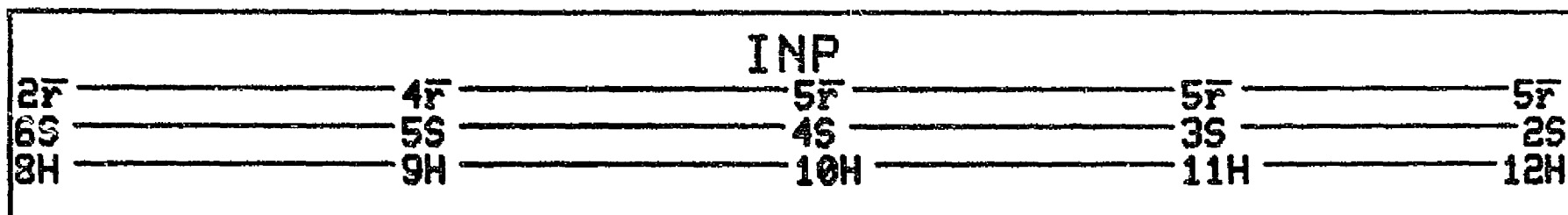
S

VELA
-5B



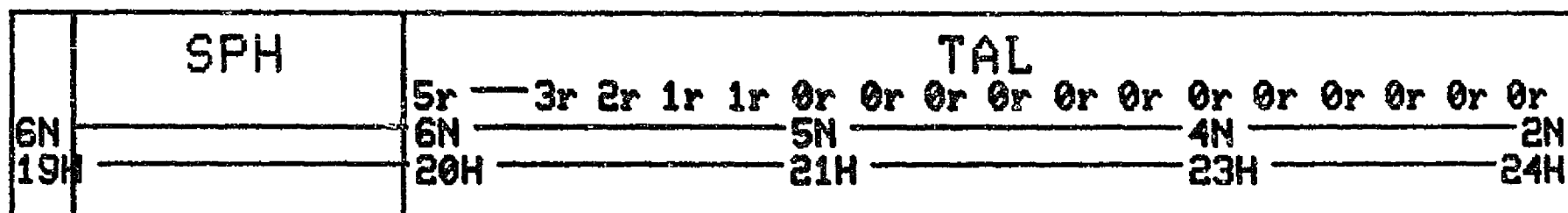
DAY 119 1977

SOL
RAD
-11A



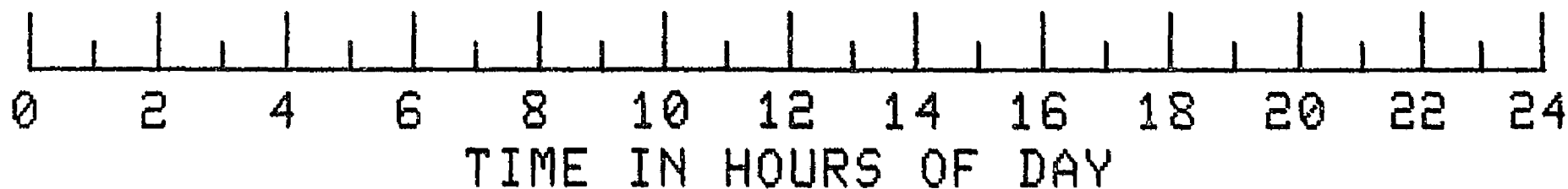
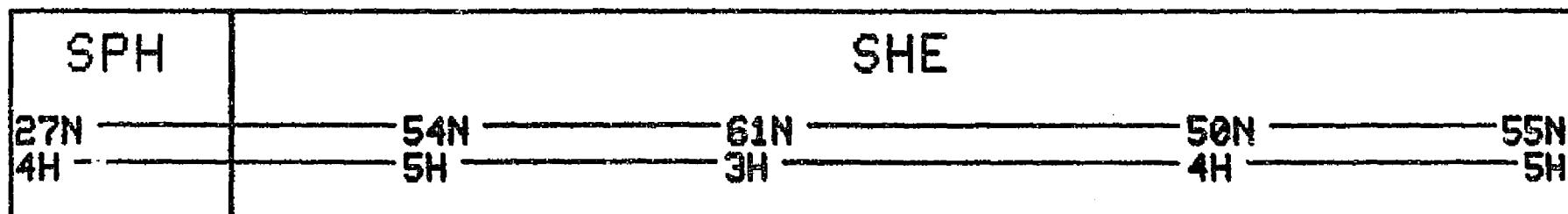
P

SOL
RAD
-11B



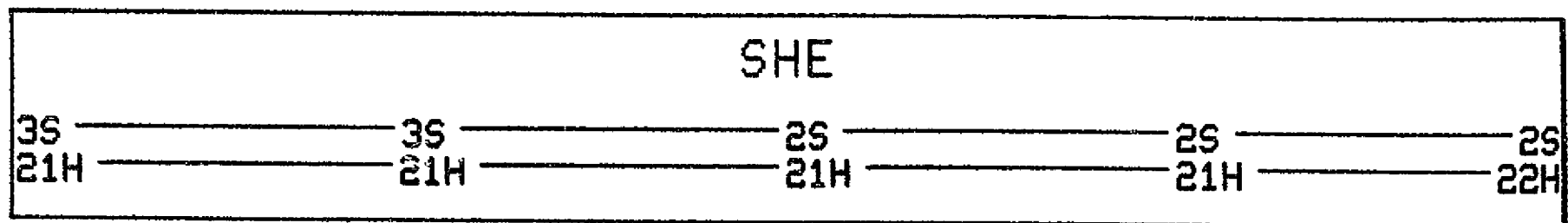
P

HAWK
EYE-1

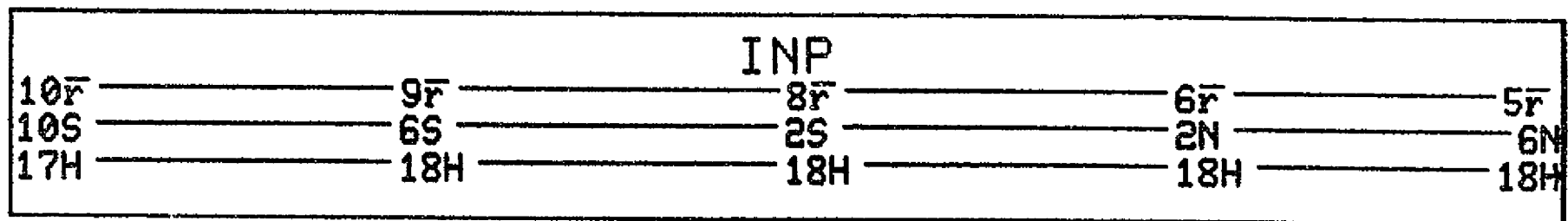


DAY 120 1977

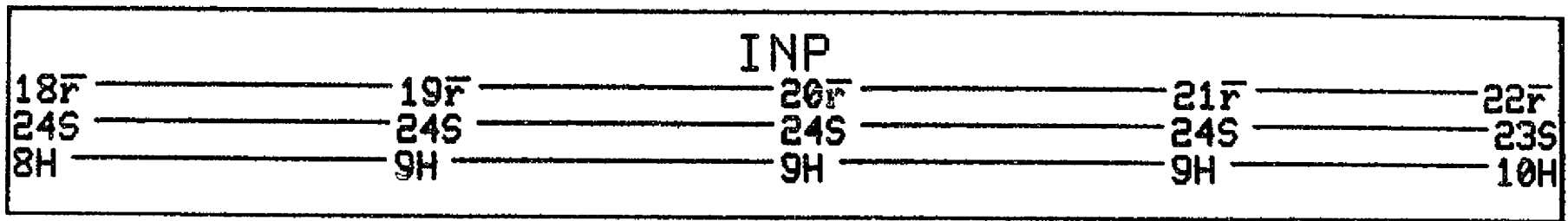
MOON



IMP-J

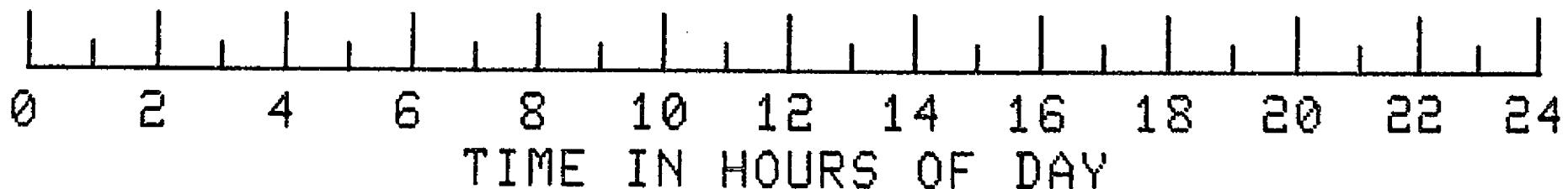
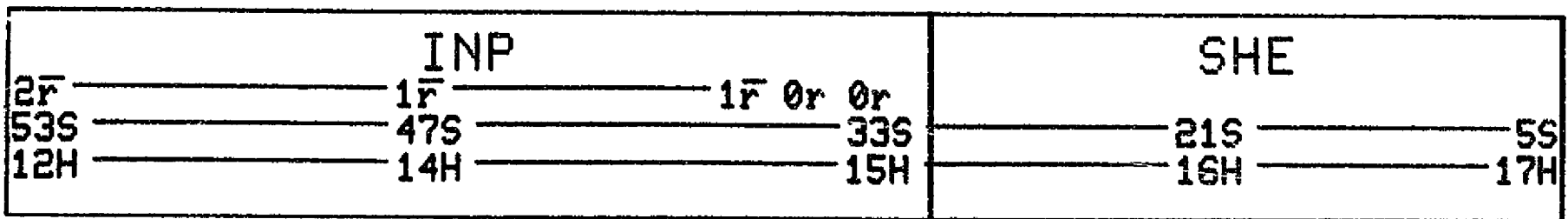


IMP-H

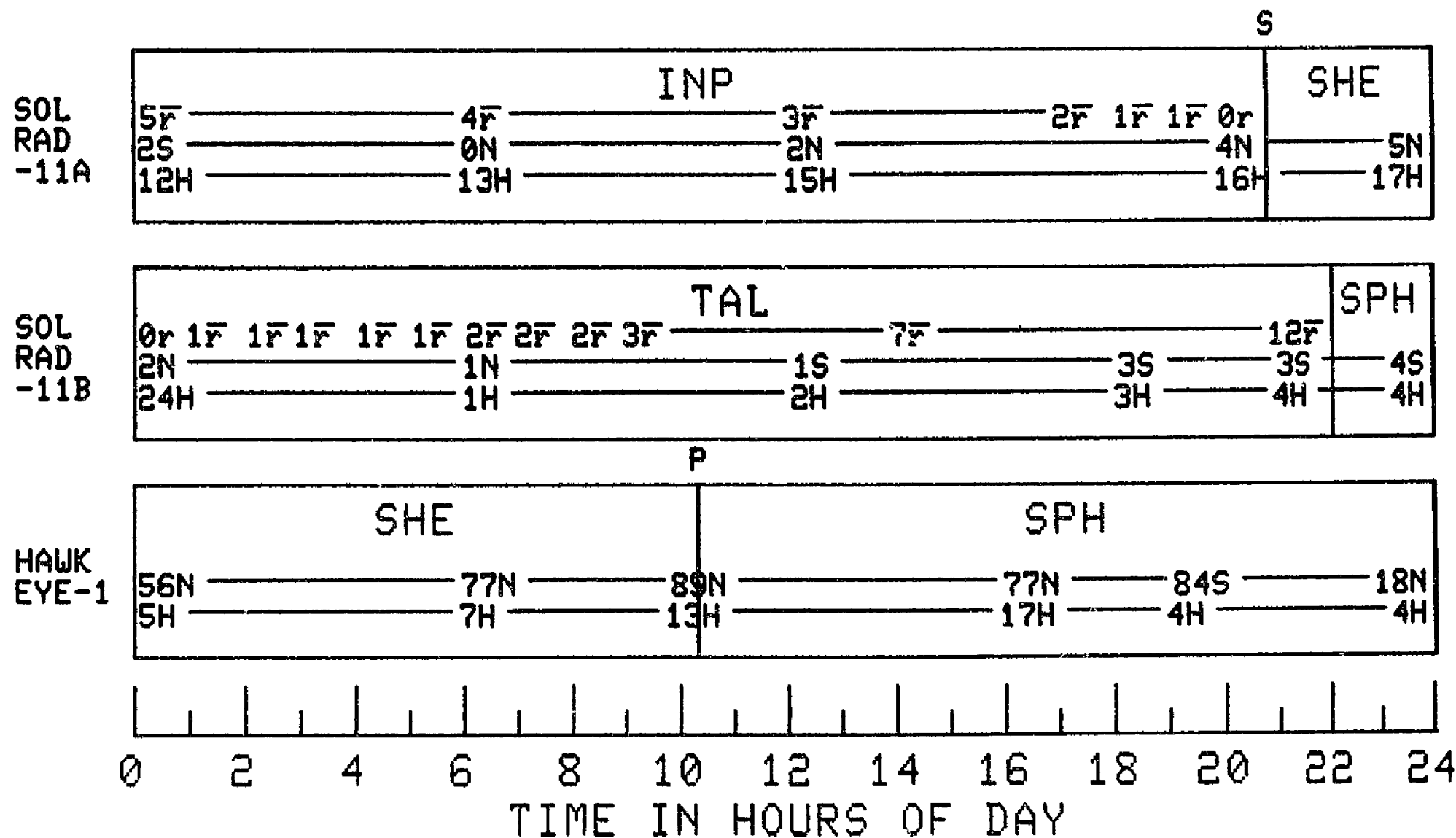


S

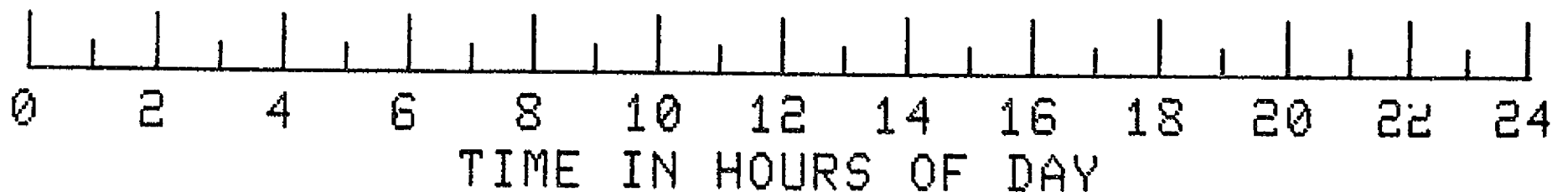
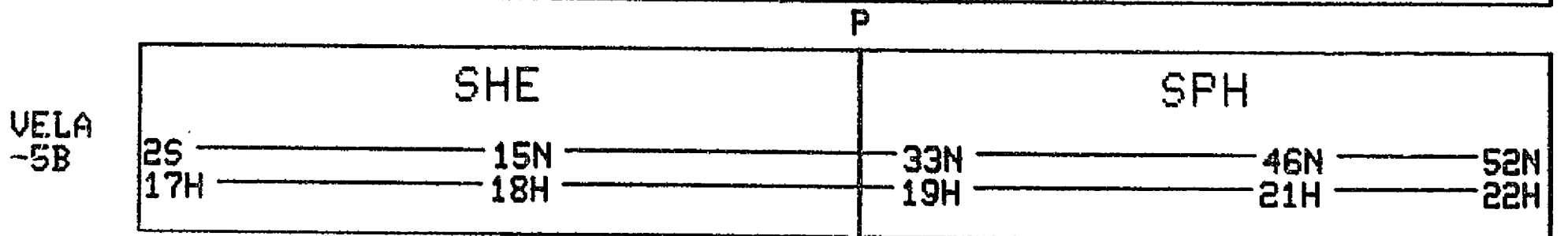
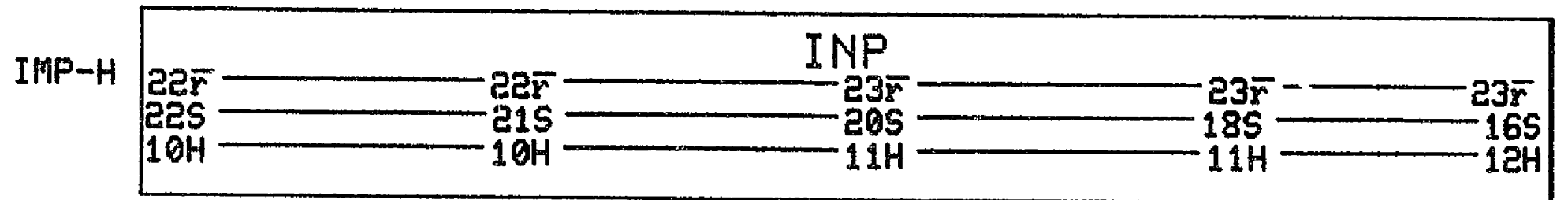
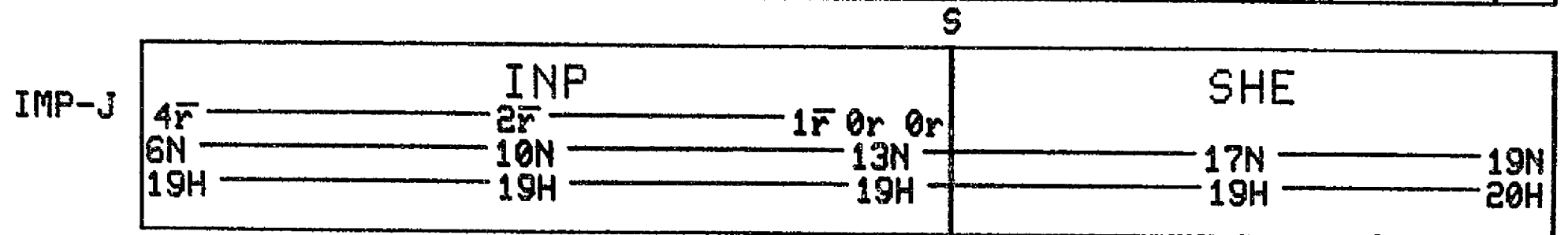
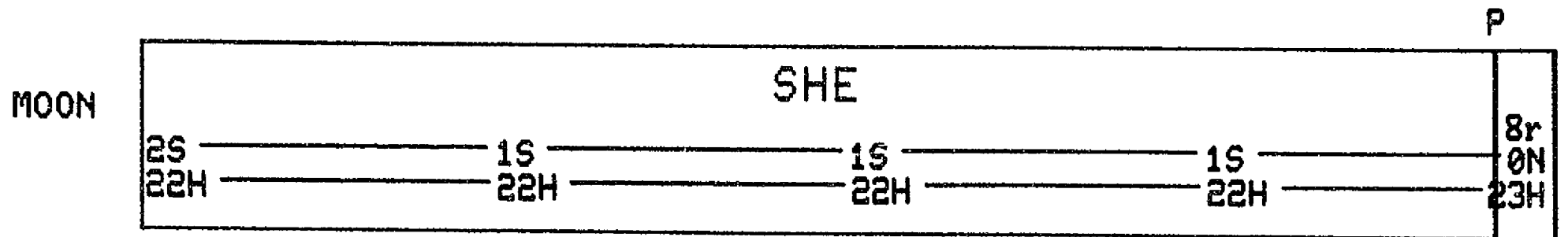
VELA
-5B



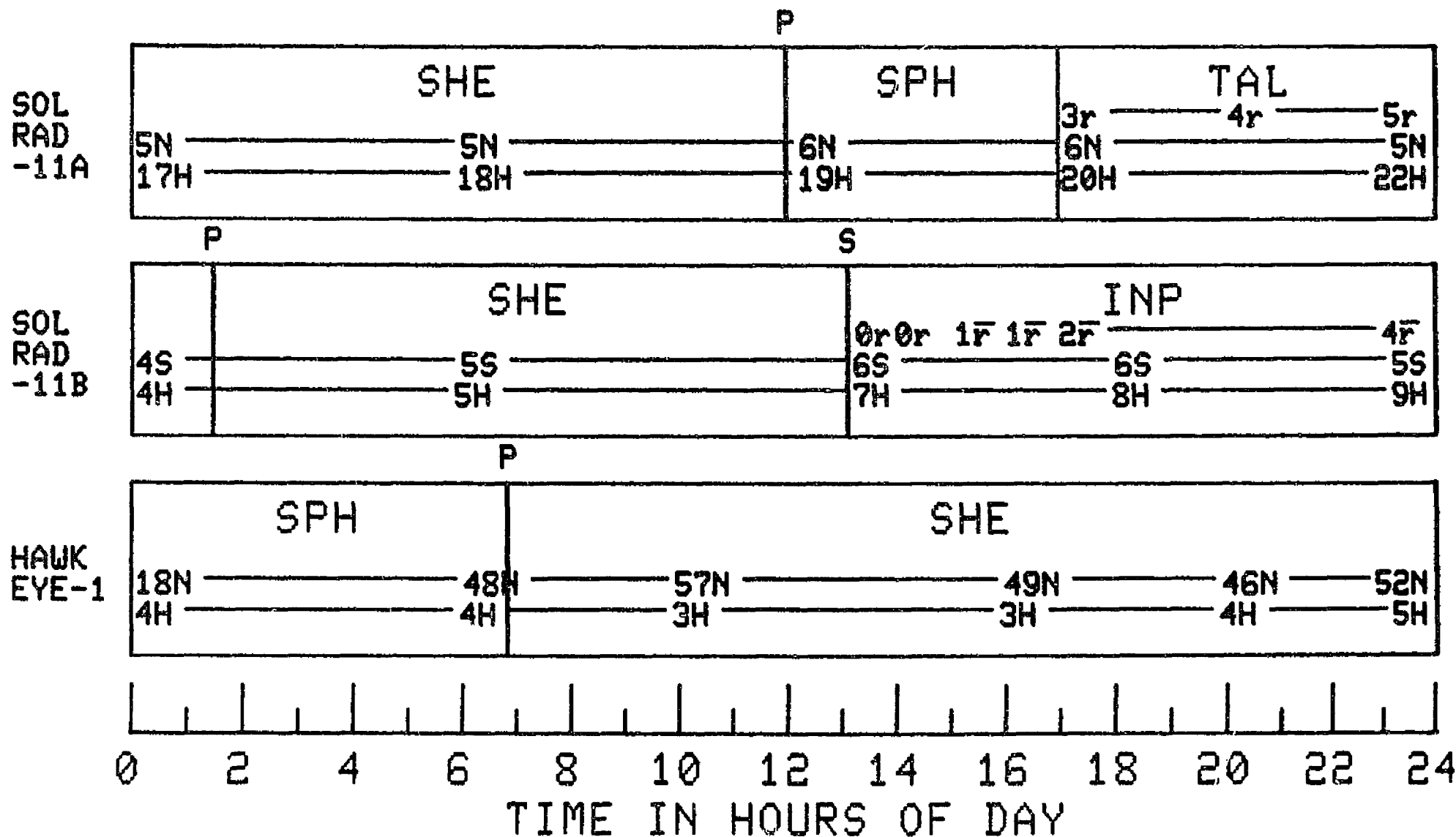
DAY 120 1977



DAY 121 1977

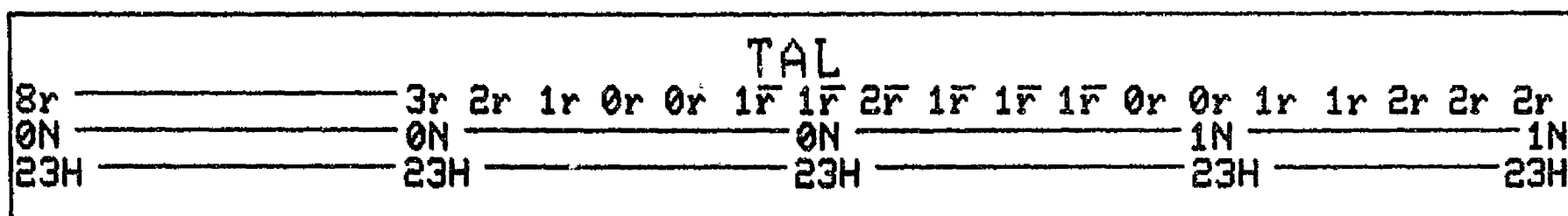


DAY 121 1977

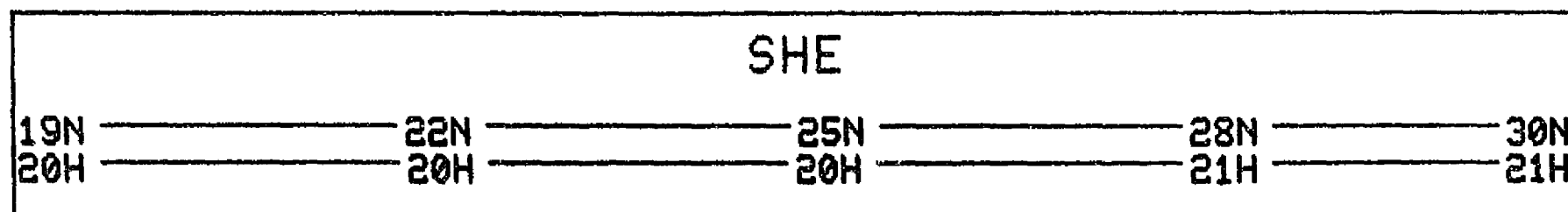


DAY 122 1977

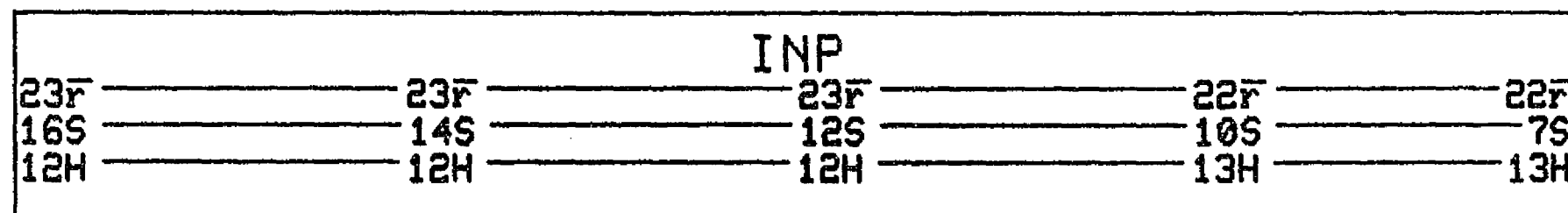
MOON



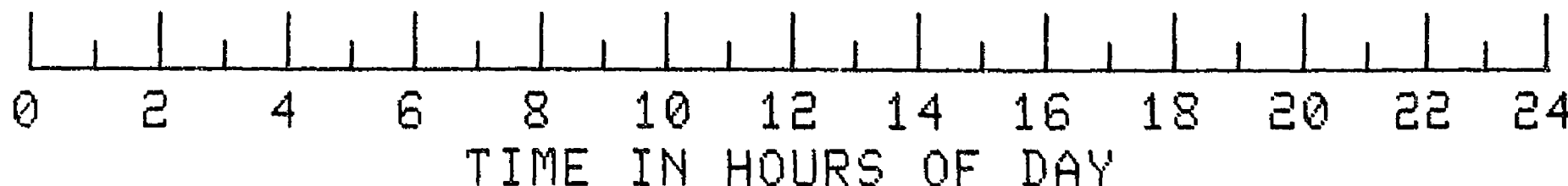
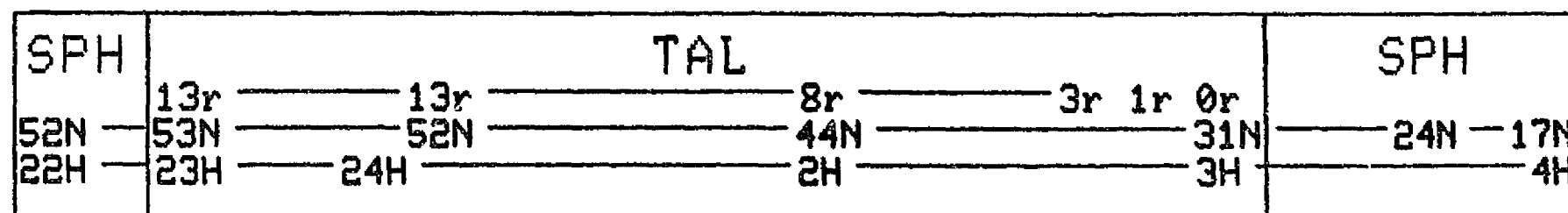
IMP-J



IMP-H

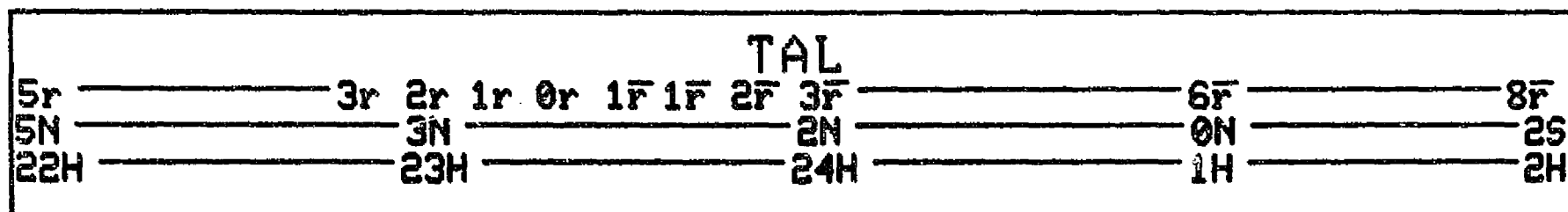


VELA
-5B

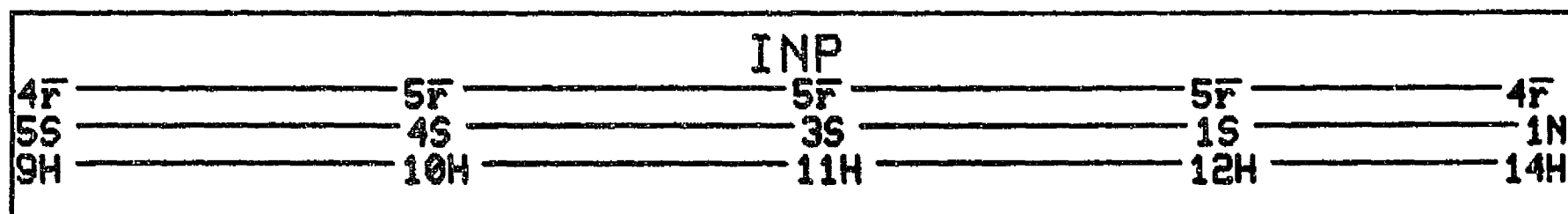


DAY 122 1977

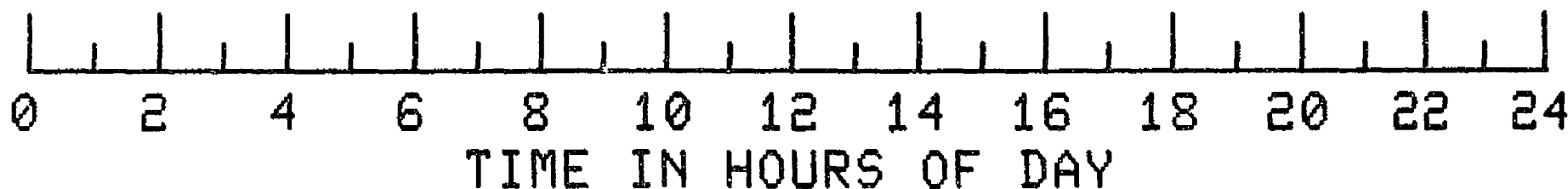
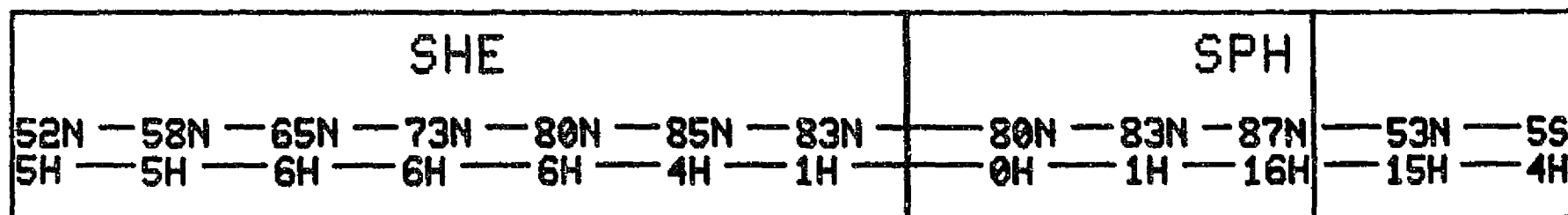
SOL
RAD
-11A



SOL
RAD
-11B

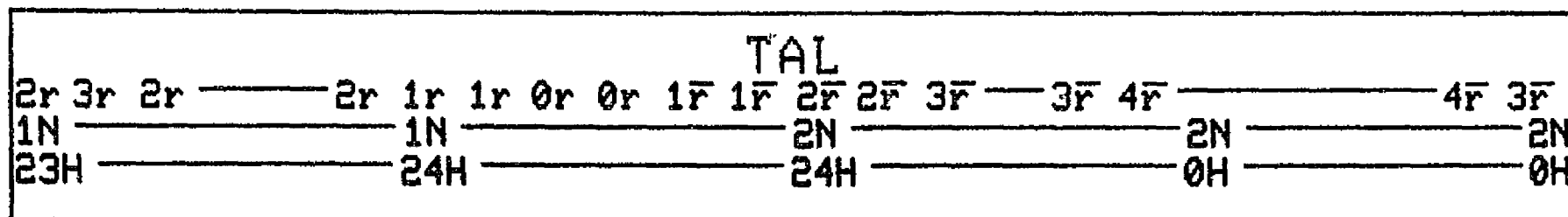


HAWK
EYE-1

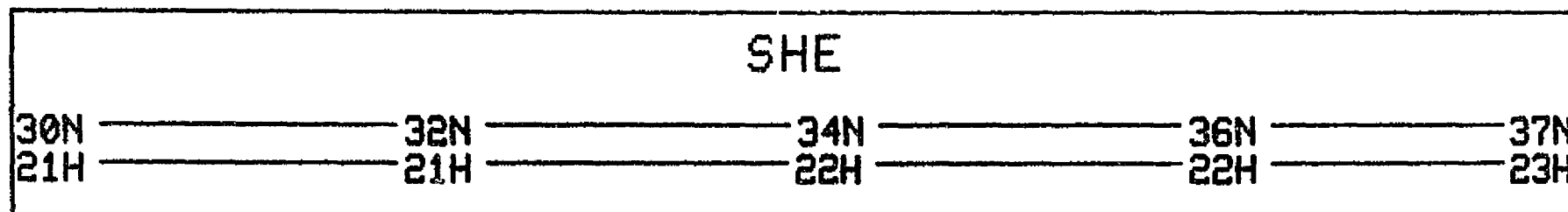


DAY 123 1977

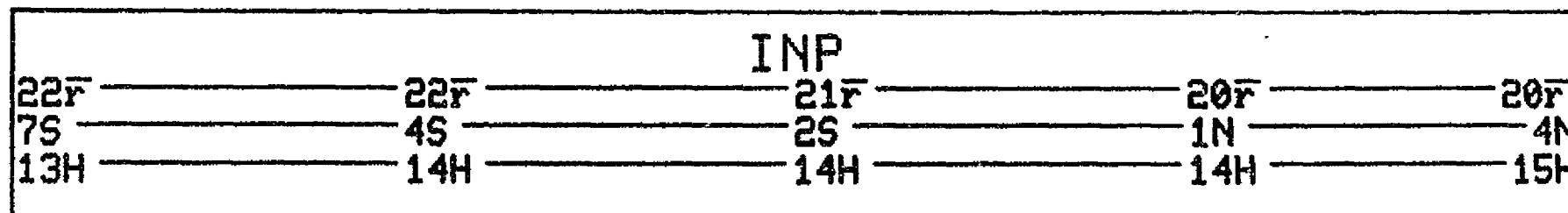
MOON



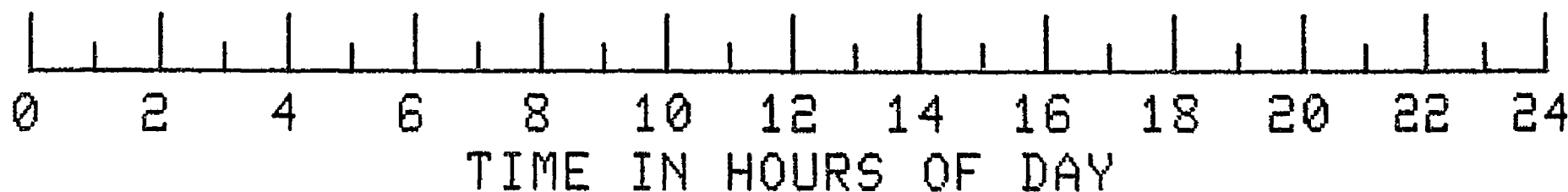
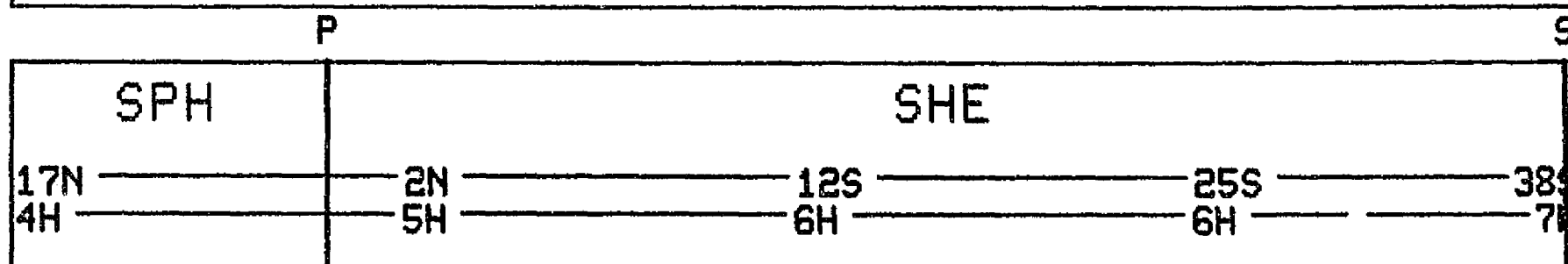
IMP-J



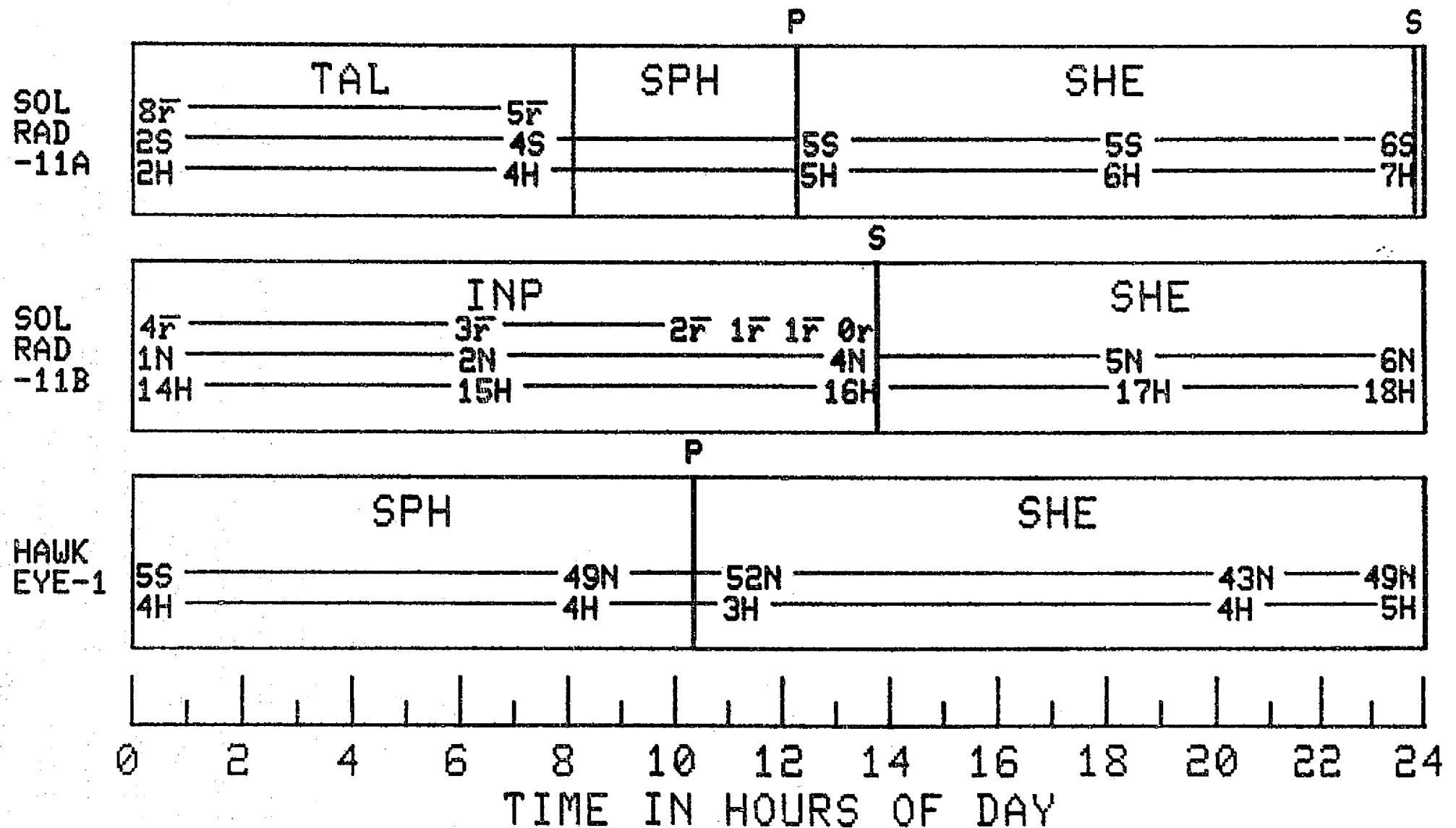
IMP-H



VELA
-5B

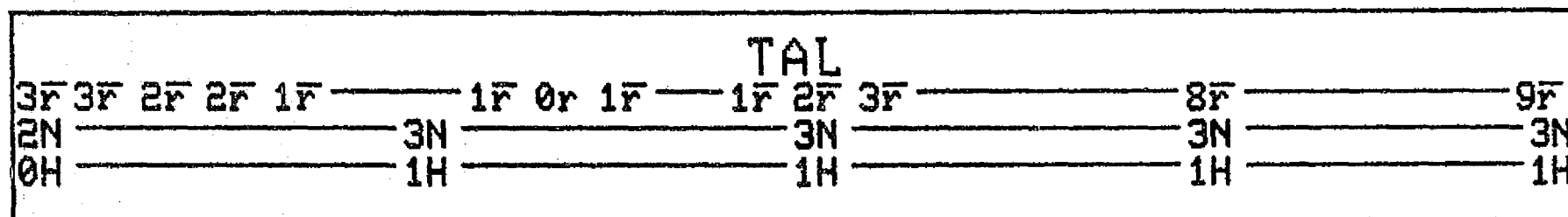


DAY 123 1977

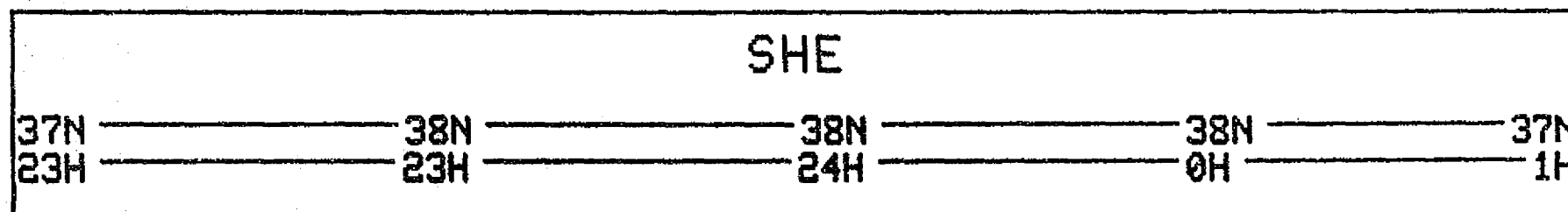


DAY 124 1977

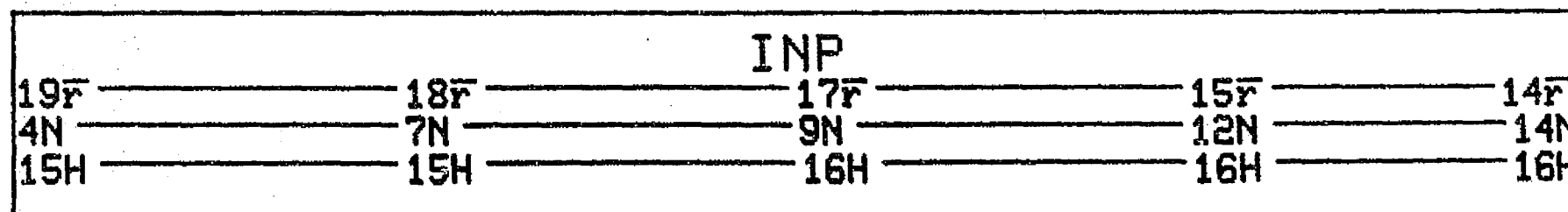
MOON



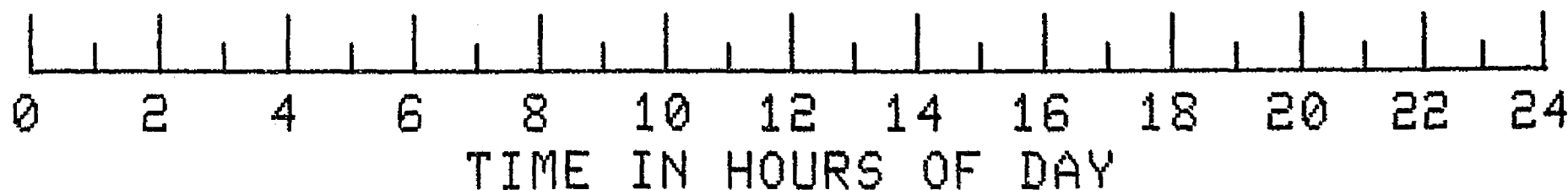
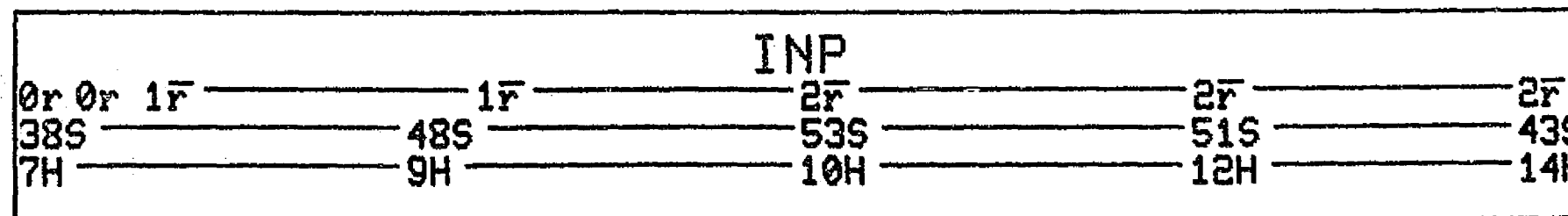
IMP-J



IMP-H

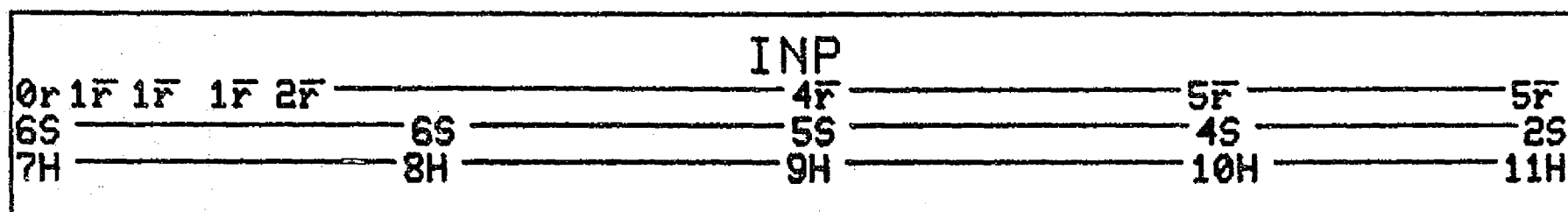


VELA
5B



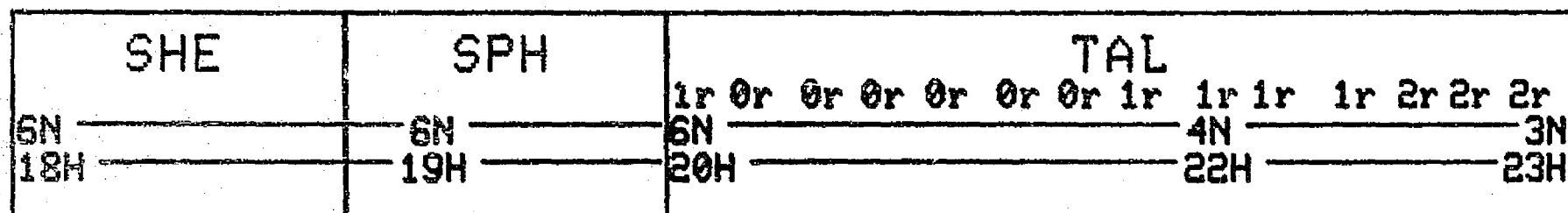
DAY 124 1977

SOL
RAD
-11A



P

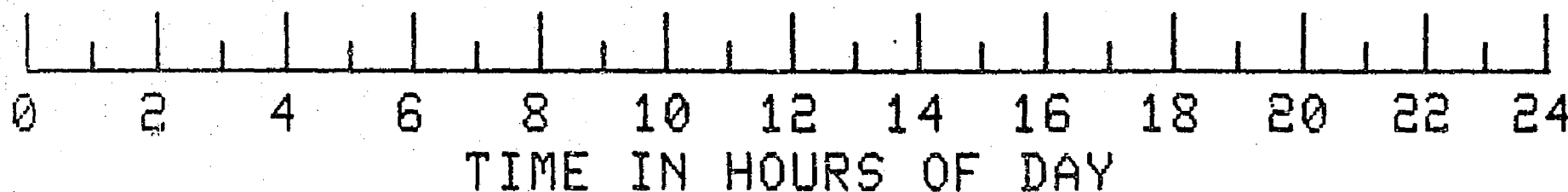
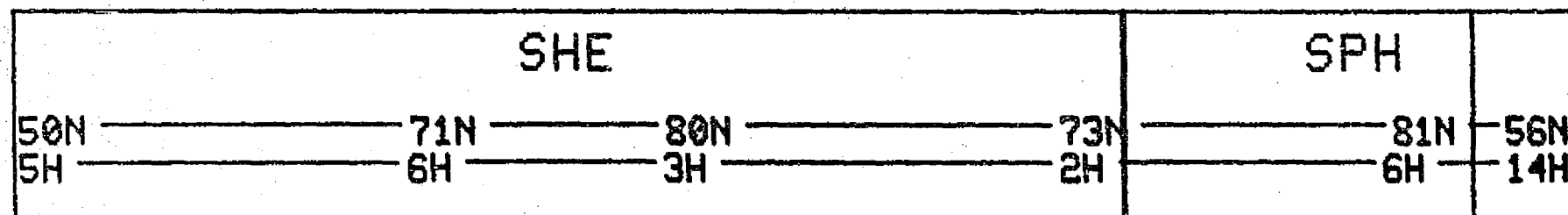
SOL
RAD
-11B



P

C

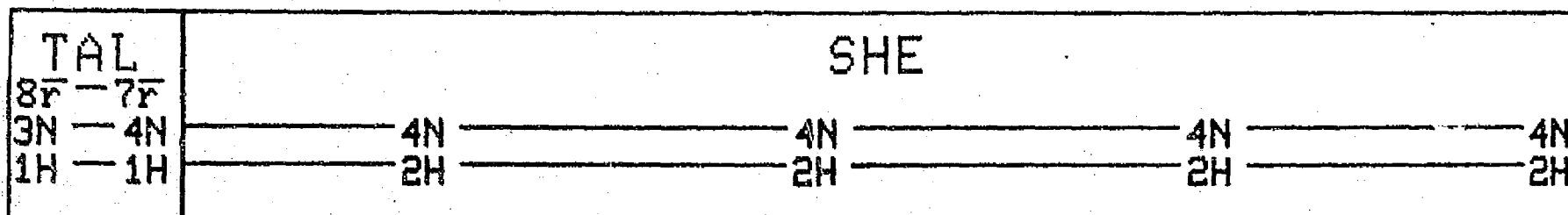
HAWK
EYE-1



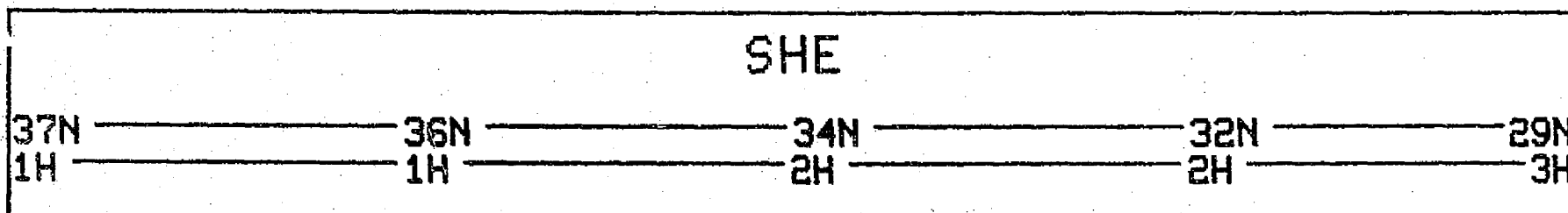
DAY 125 1977

P

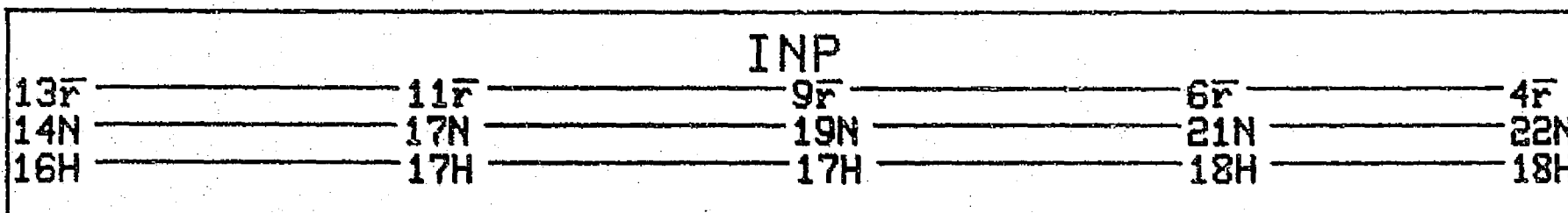
MOON



IMP-J

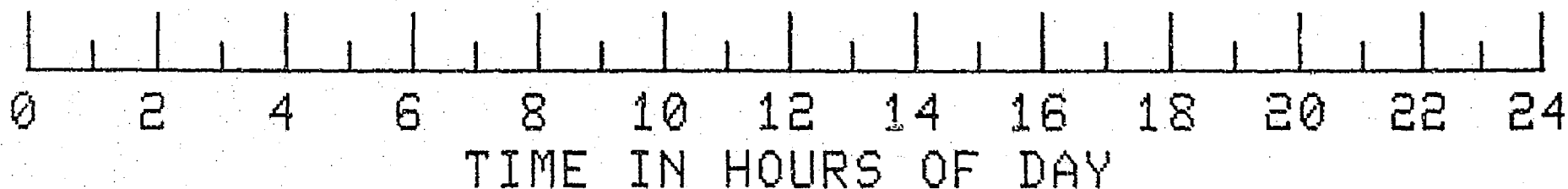
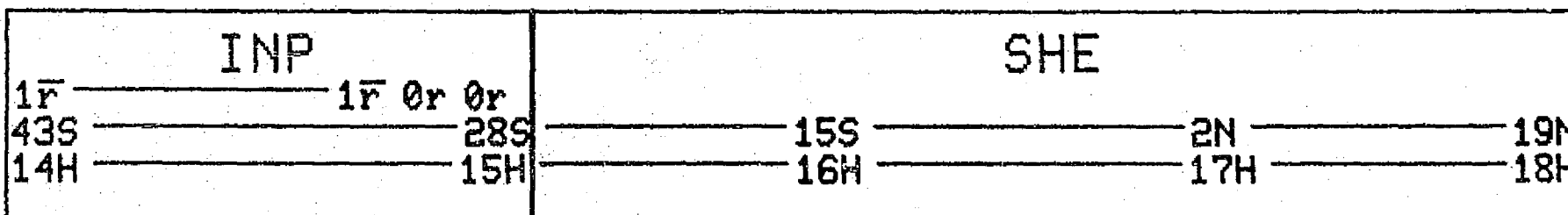


IMP-H



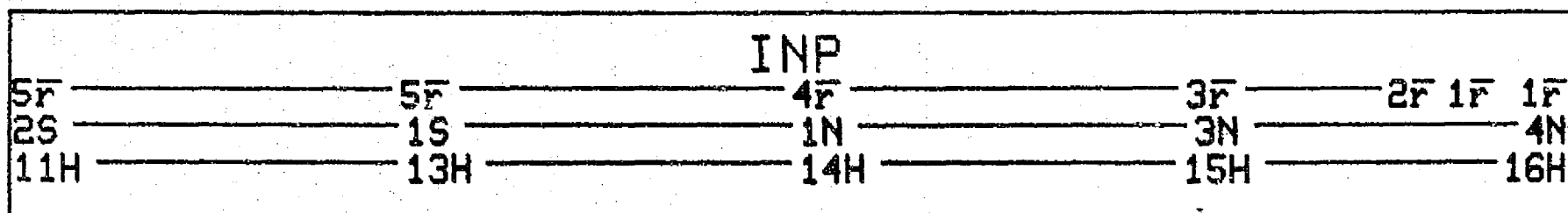
S

VELA
-5B

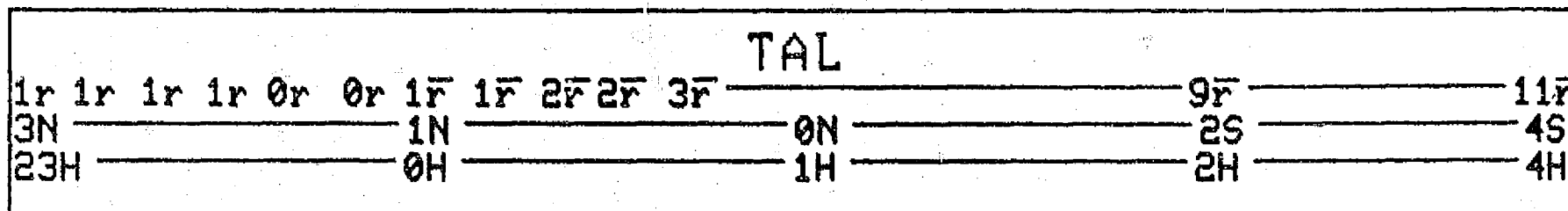


DAY 125 1977

SOL
RAD
-11A

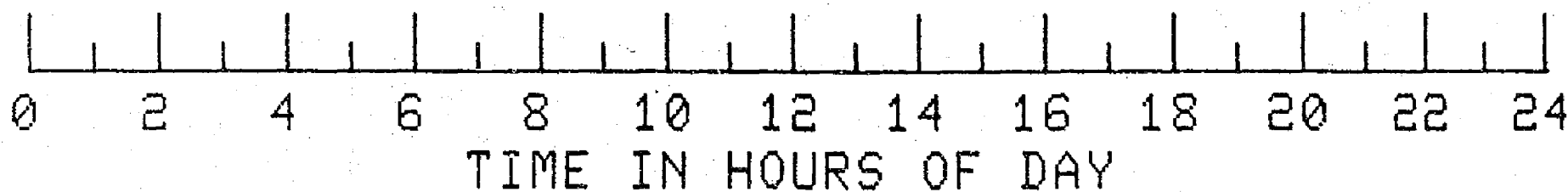
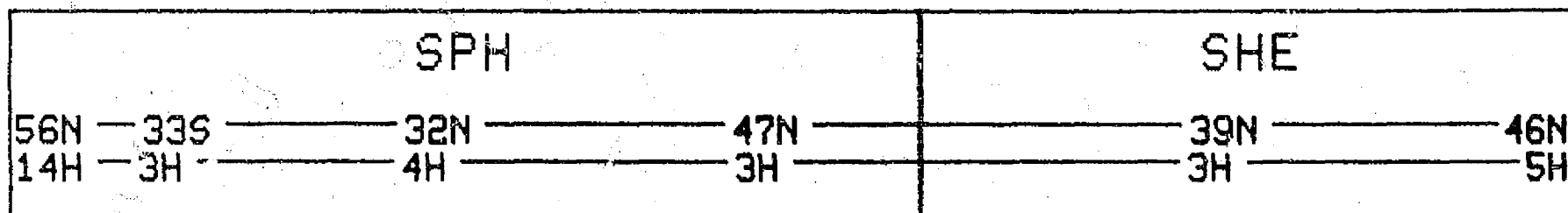


SOL
RAD
-11B



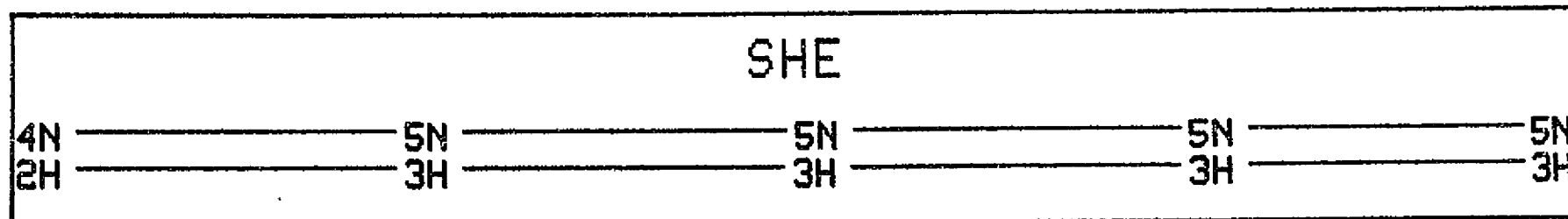
P

HAWK
EYE-1

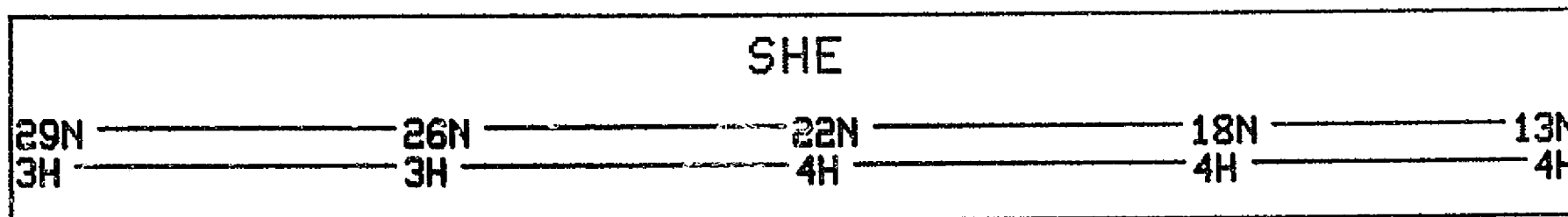


DAY 126 1977

MOON

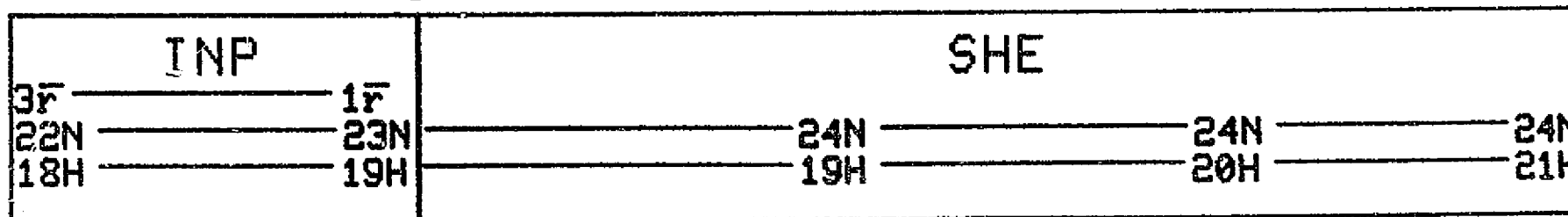


IMP-J



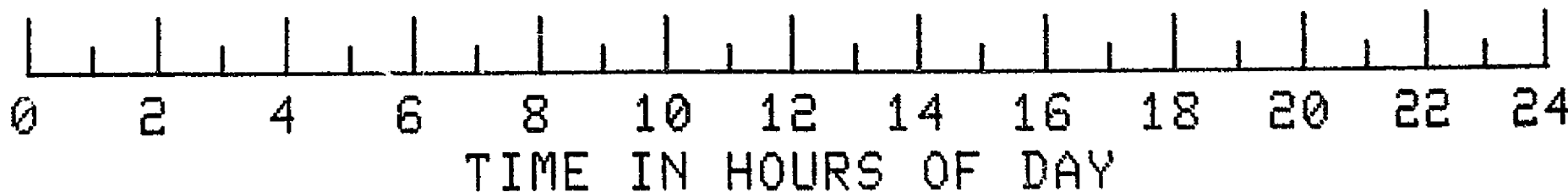
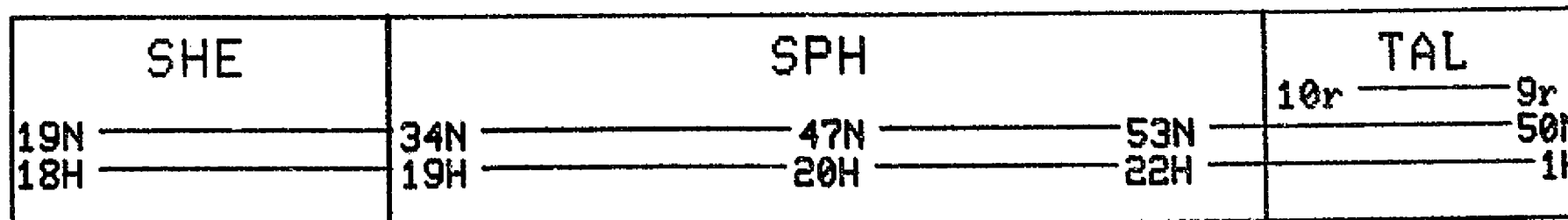
S

IMP-H

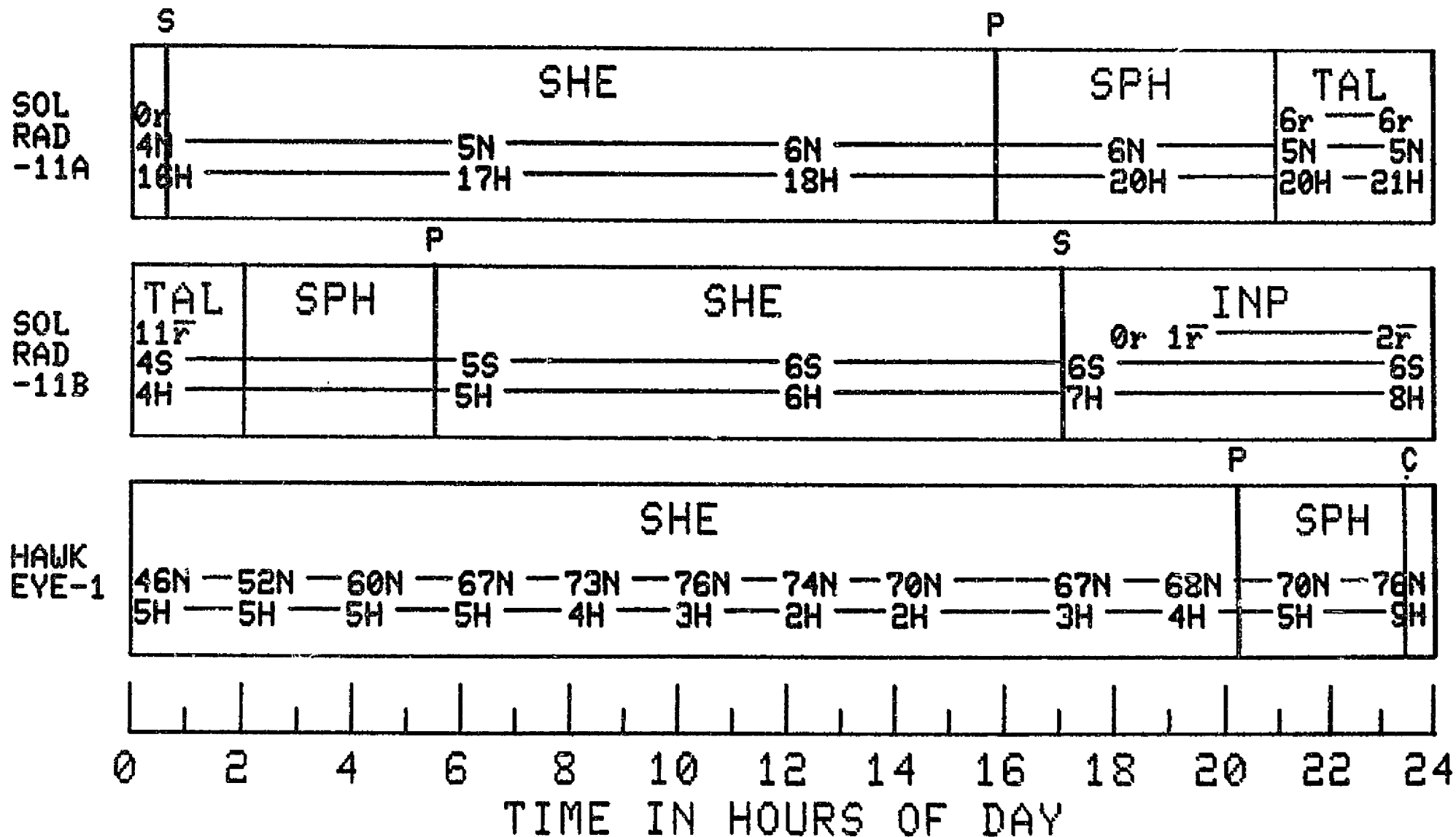


P

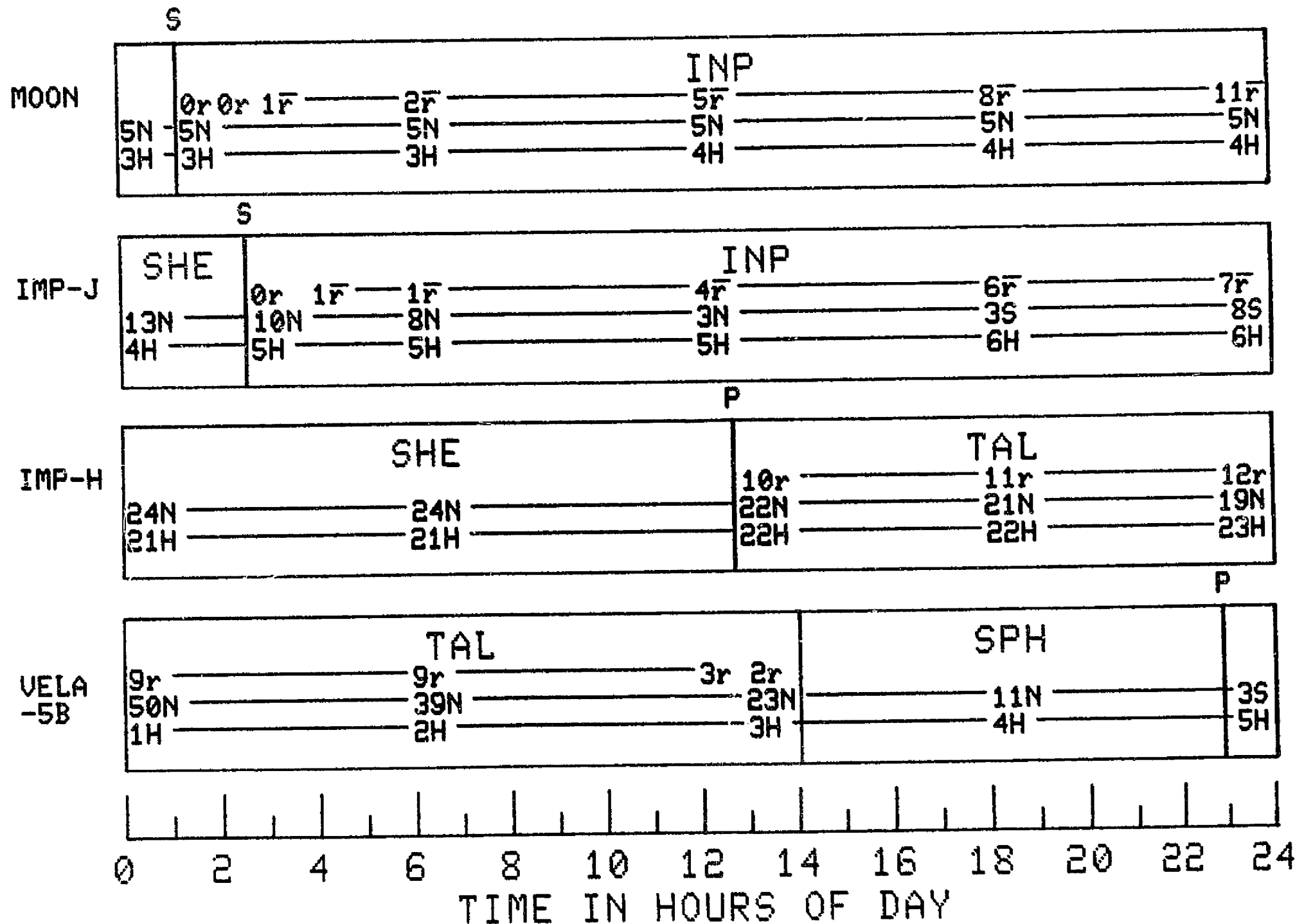
VELA
-5B



DAY 126 1977

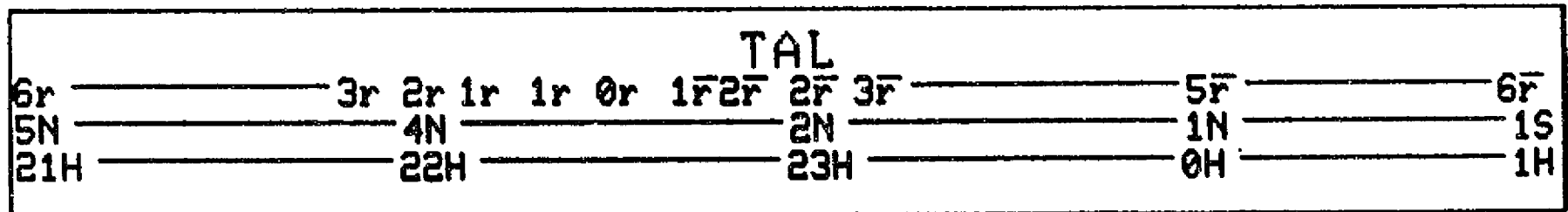


DAY 127 1977

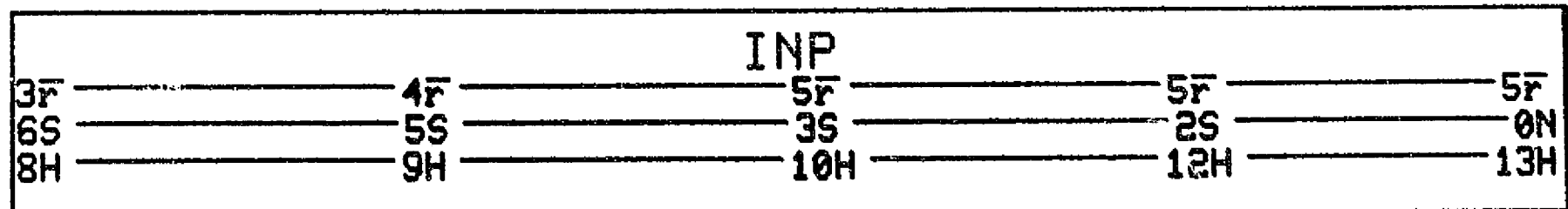


DAY 127 1977

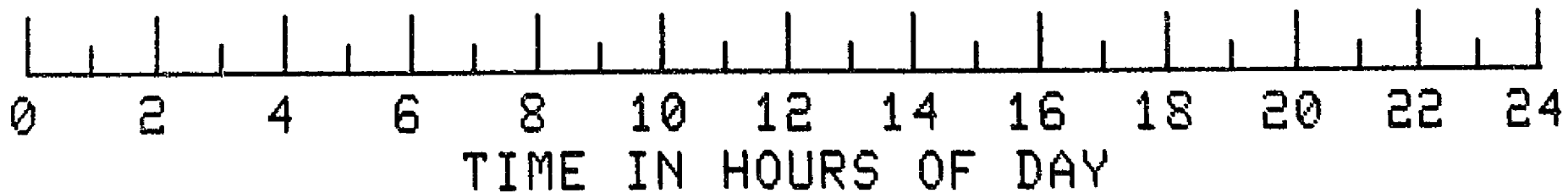
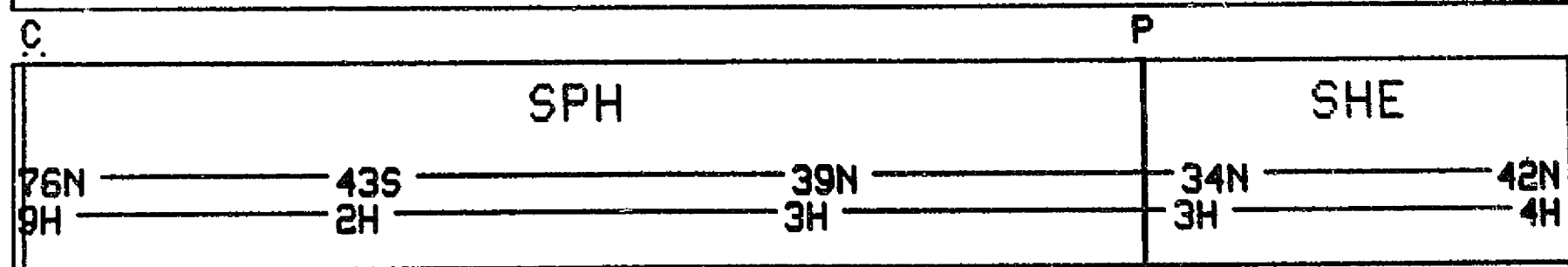
SOL
RAD
-11A



SOL
RAD
-11B

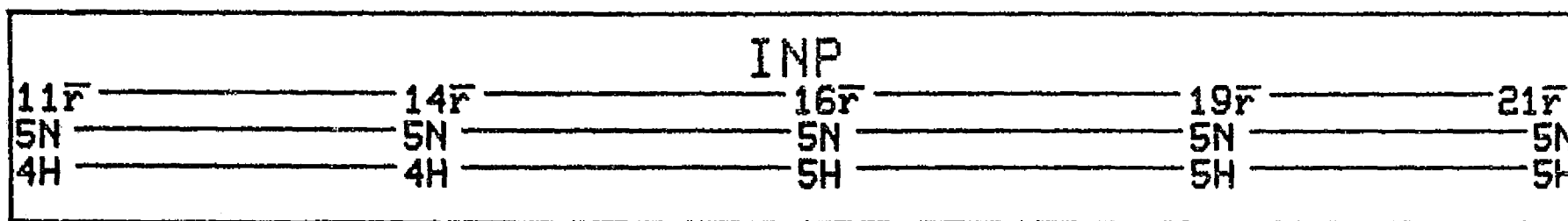


HAWK
EYE-1

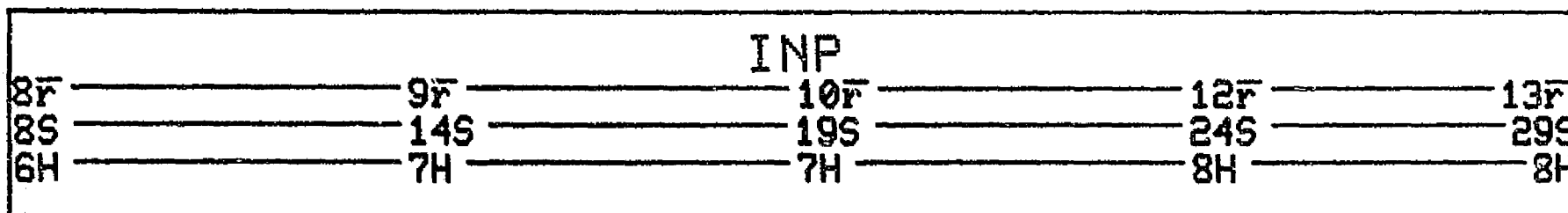


DAY 128 1977

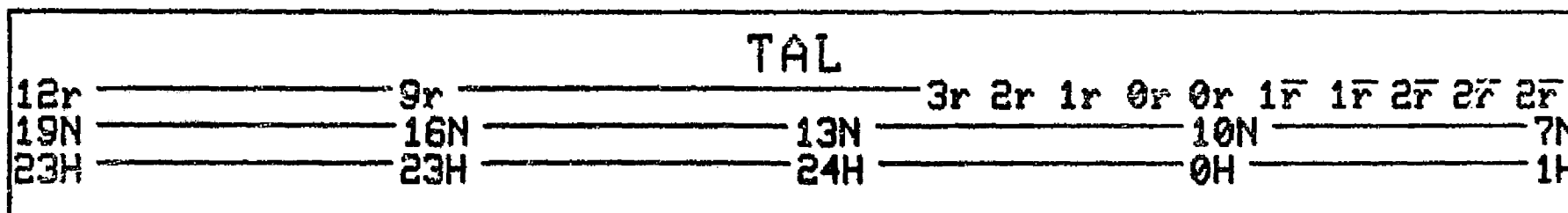
MOON



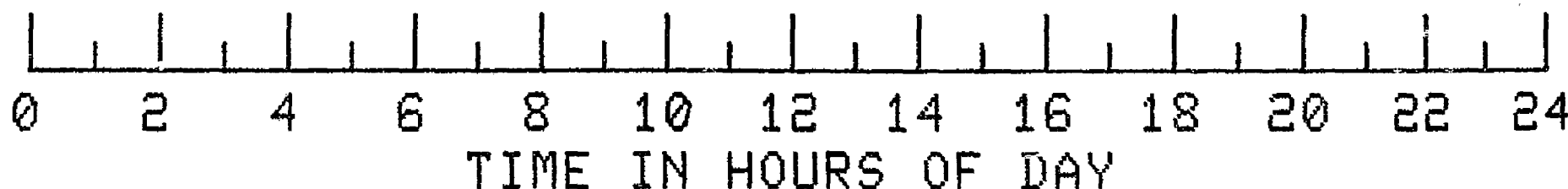
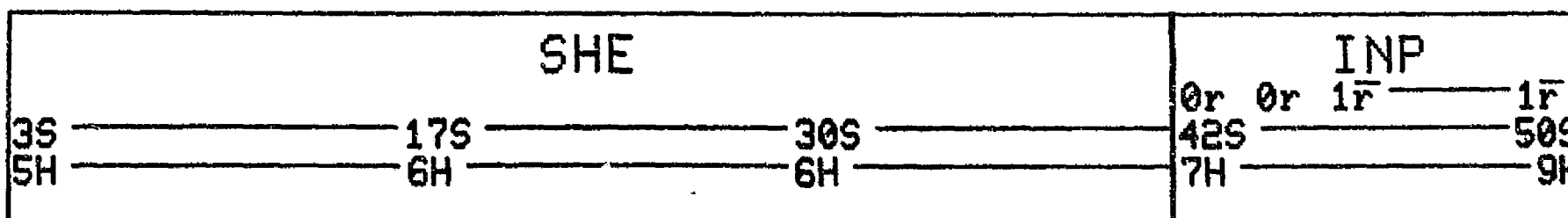
IMP-J



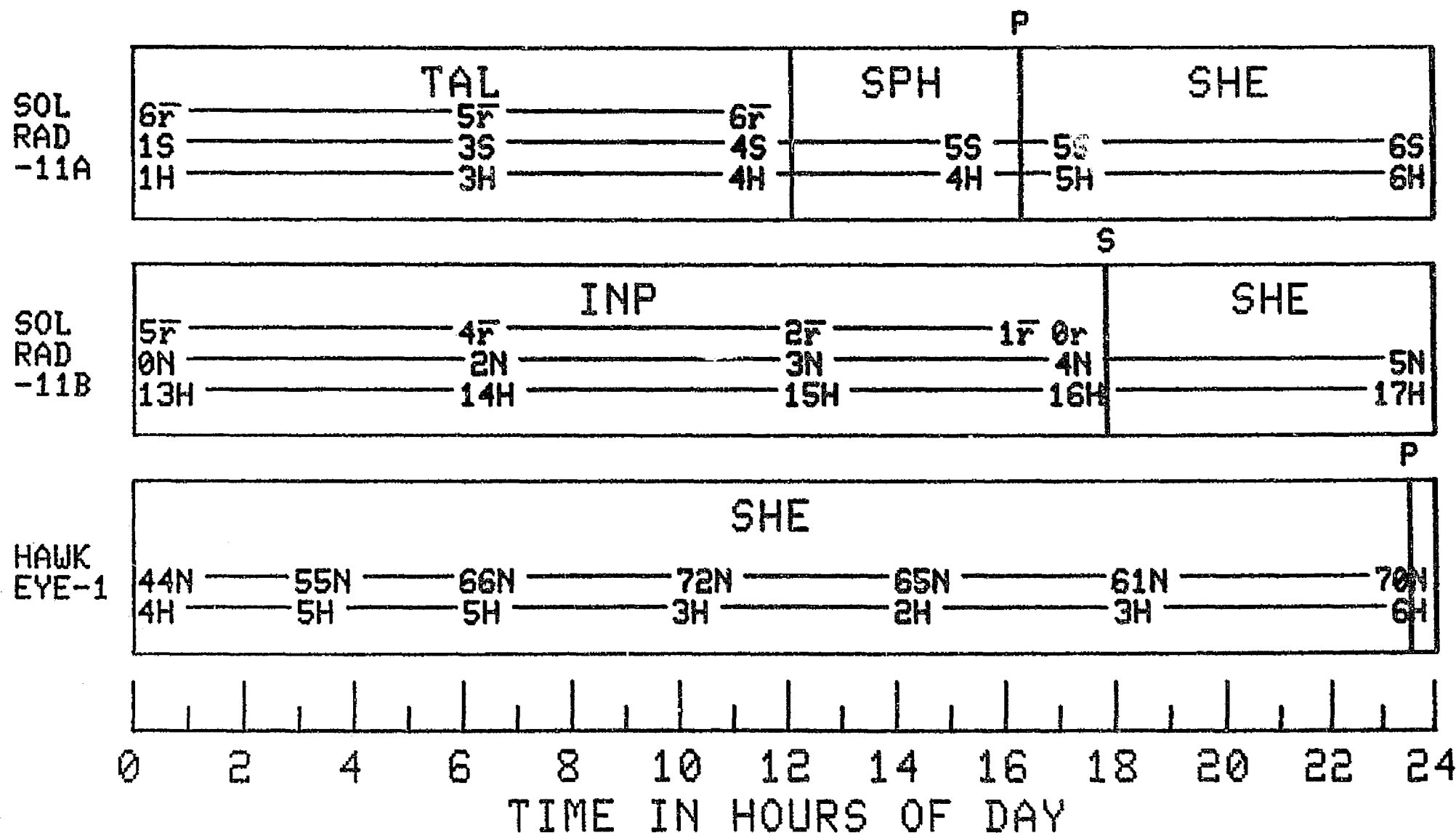
IMP-H



VELA
-5B

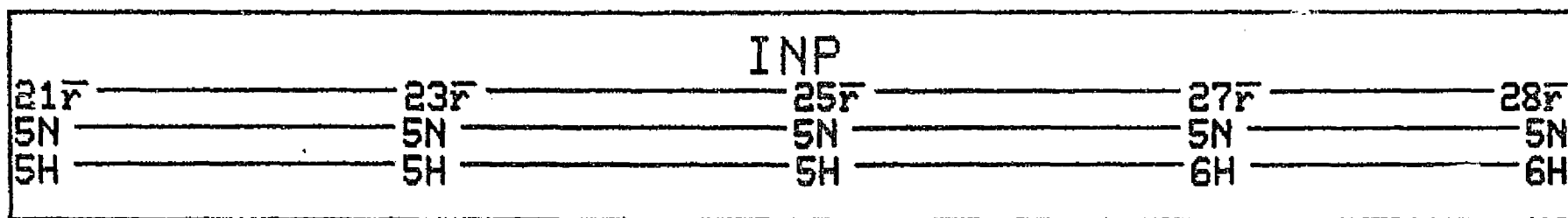


DAY 128 1977

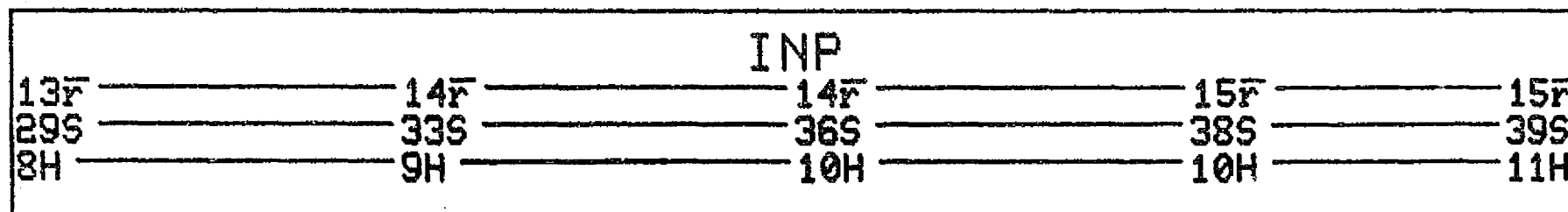


DAY 129 1977

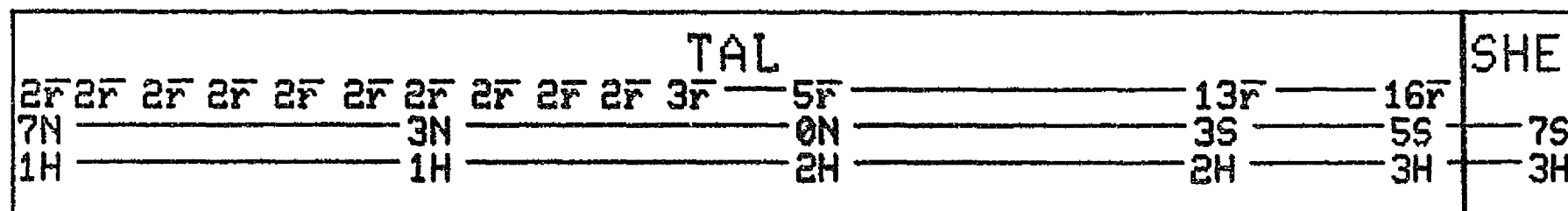
MOON



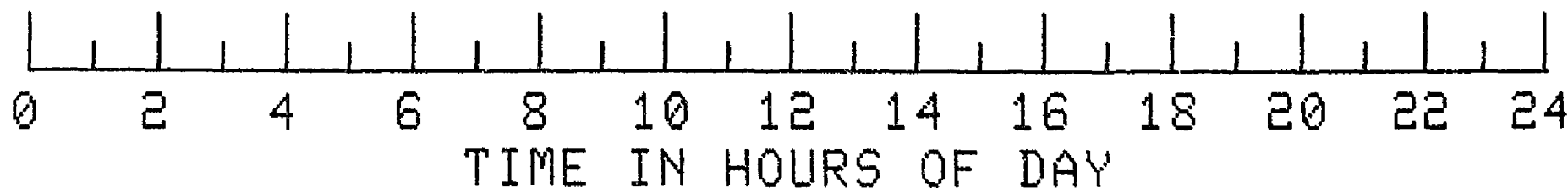
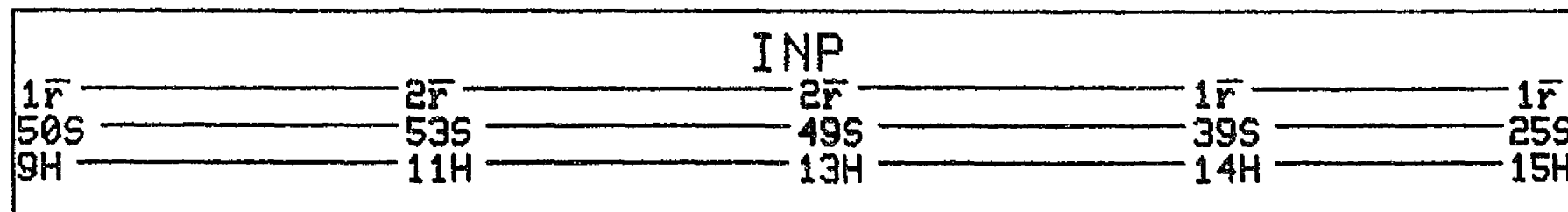
IMP-J



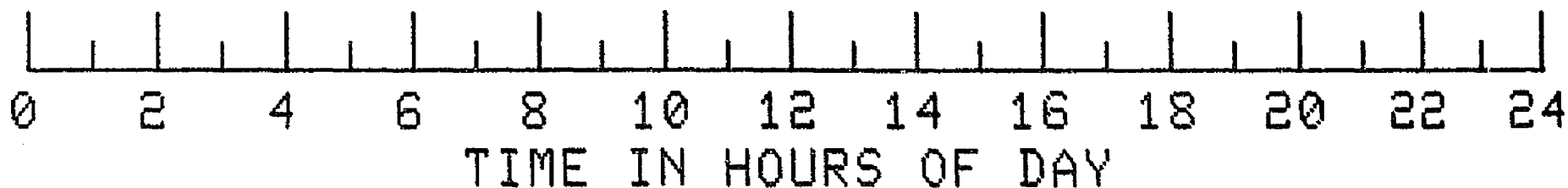
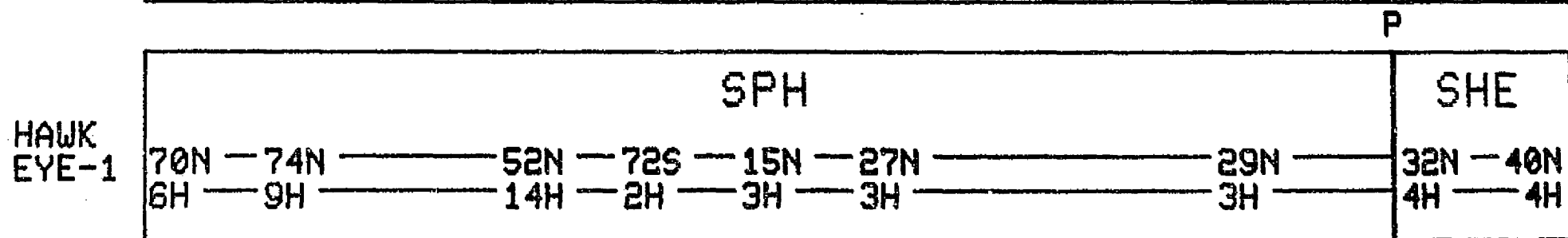
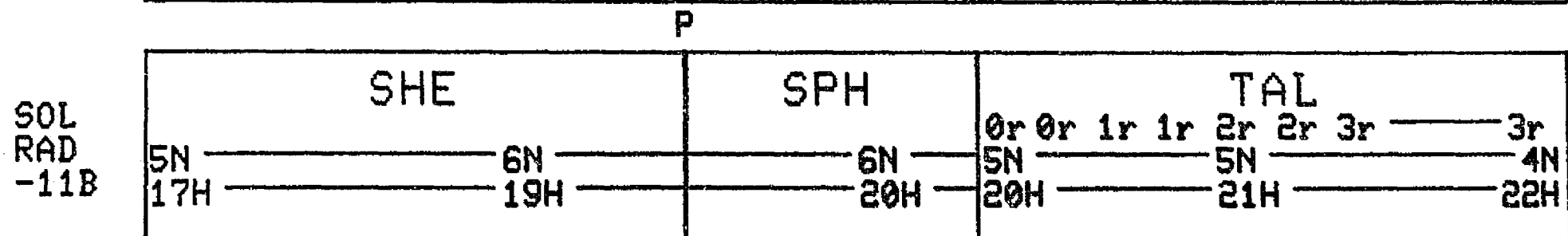
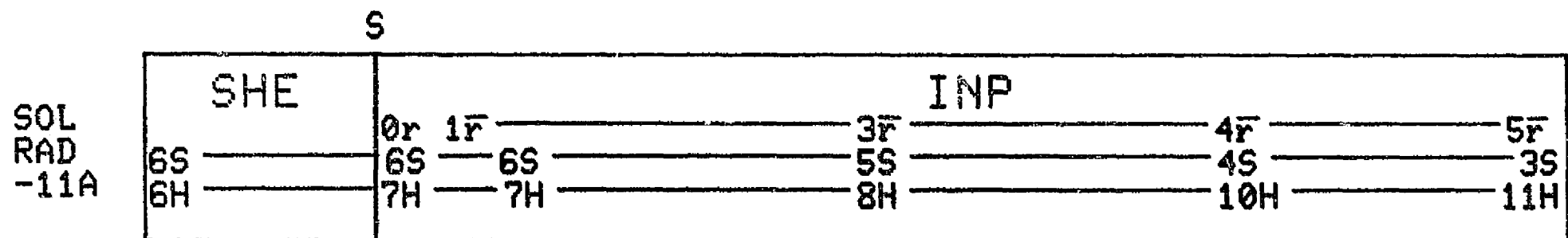
IMP-H



VELA
-5B

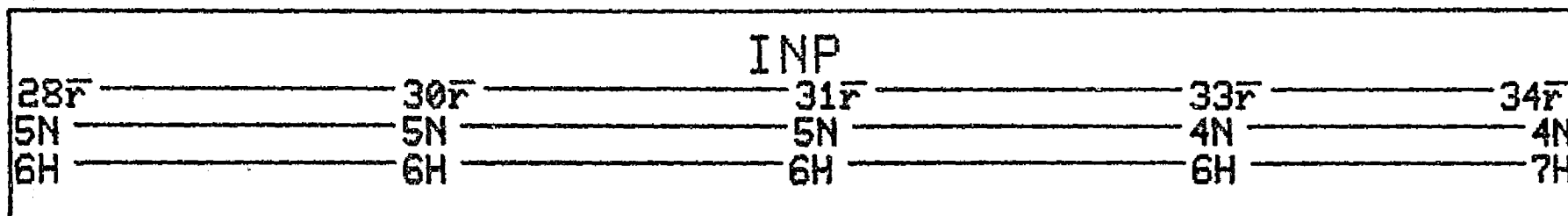


DAY 129 1977

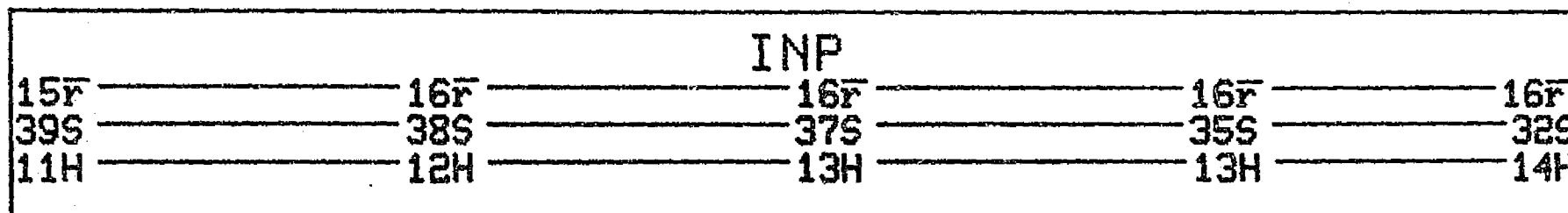


DAY 130 1977

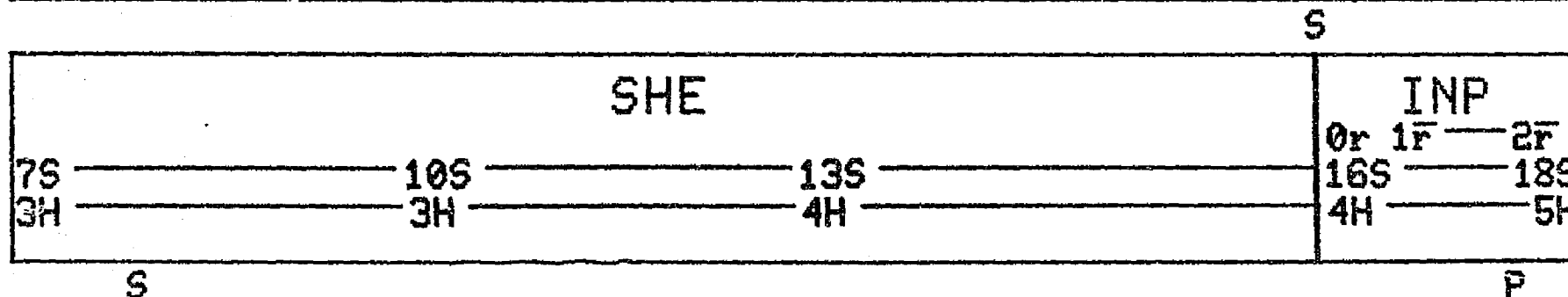
MOON



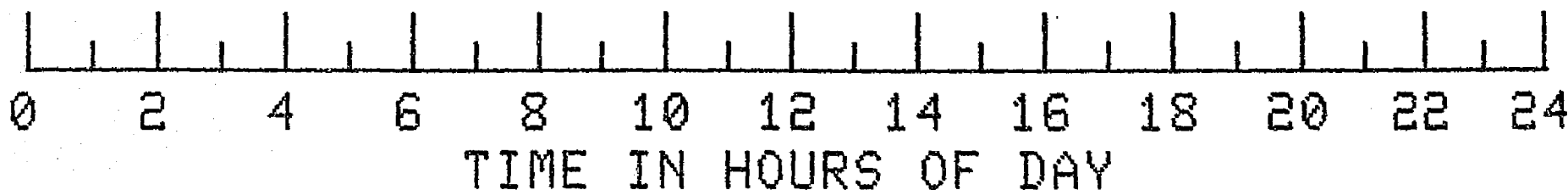
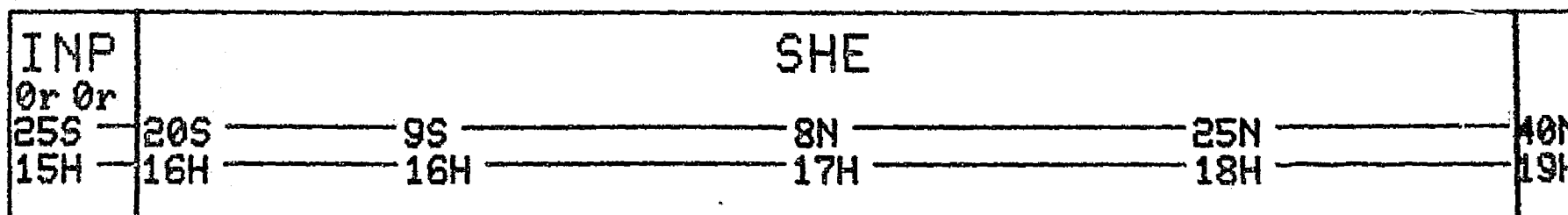
IMP-J



IMP-H

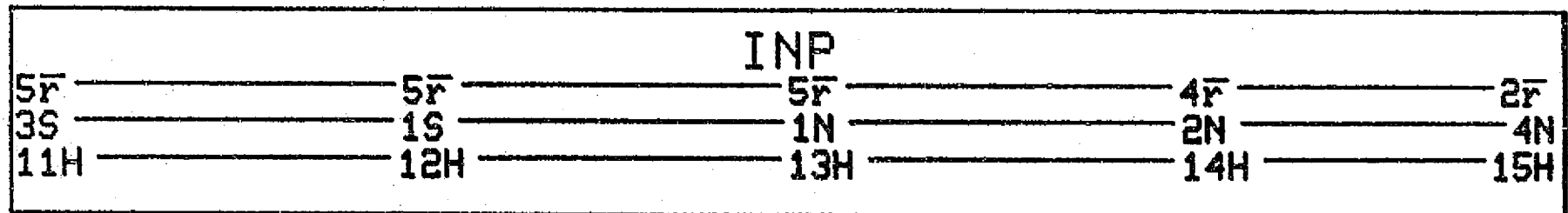


VELA
-5B

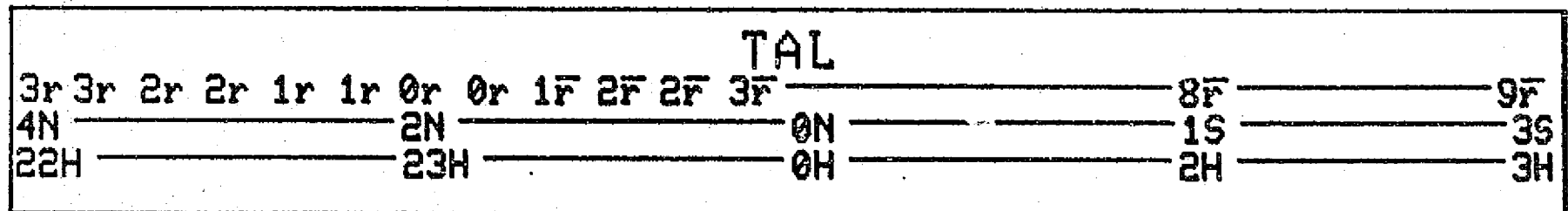


DAY 130 1977

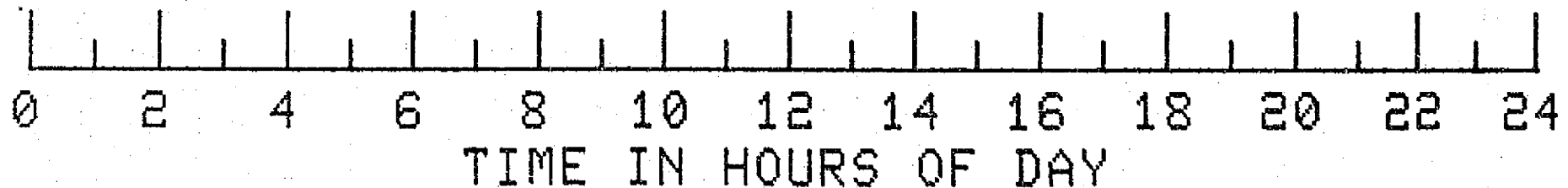
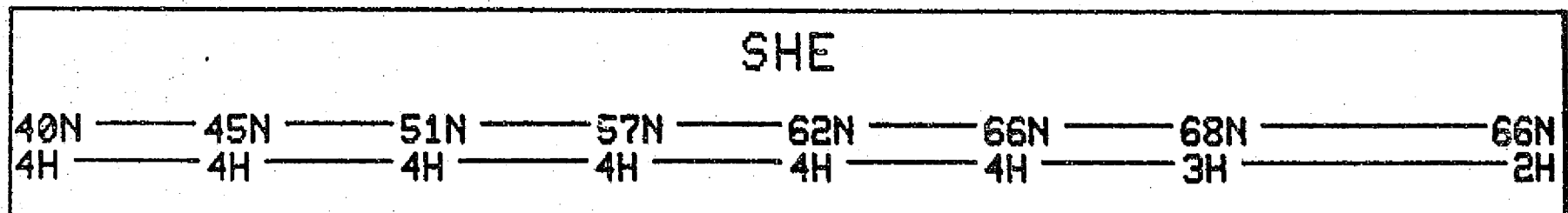
SOL
RAD
-11A



SOL
RAD
-11B

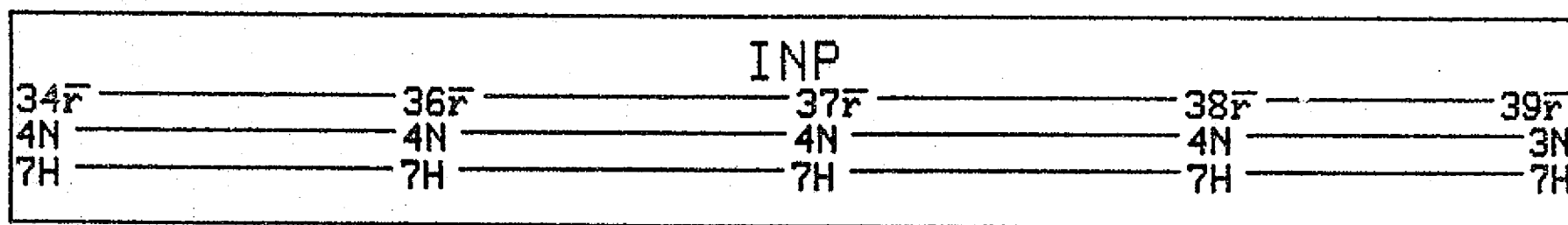


HAWK
EYE-1

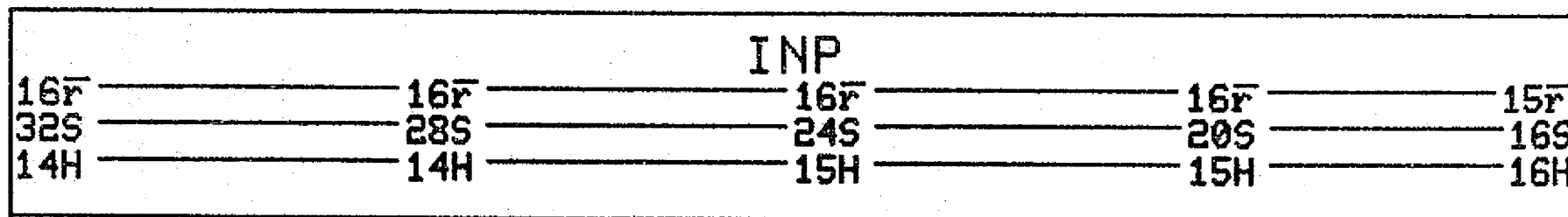


DAY 131 1977

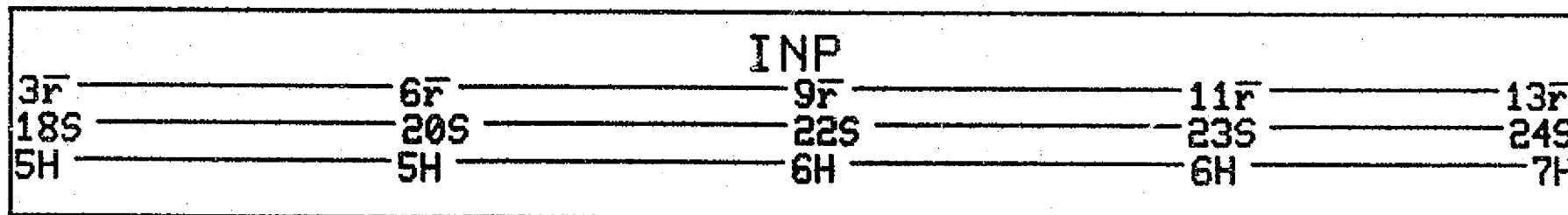
MOON



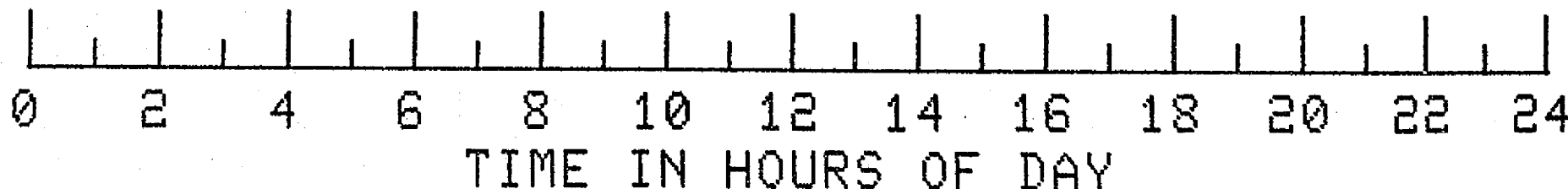
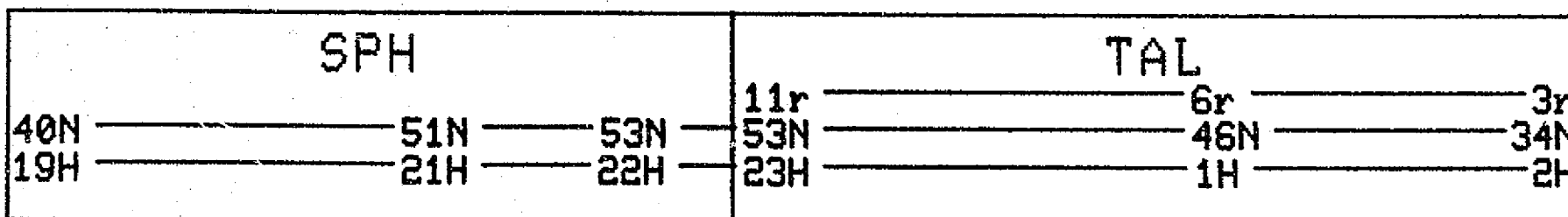
IMP-J



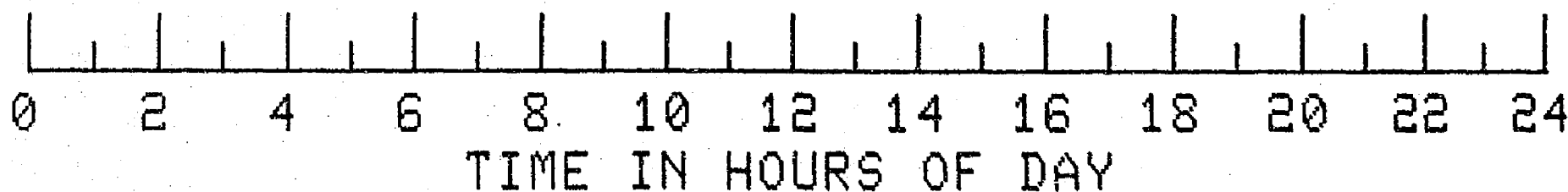
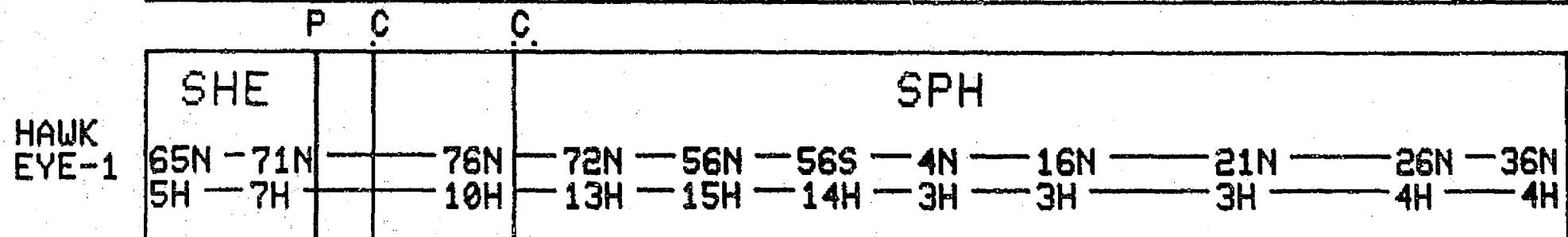
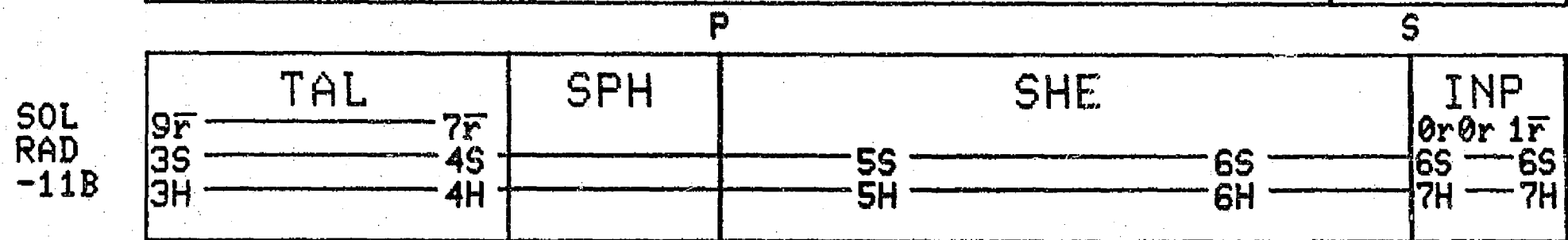
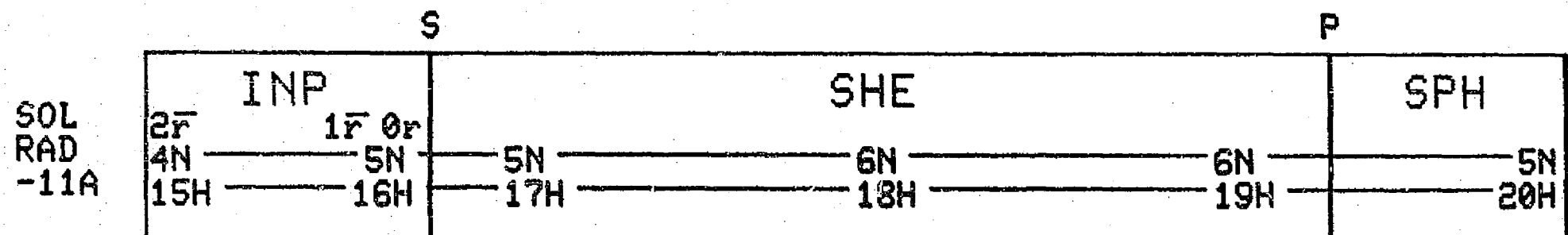
IMP-H



VELA
-5B

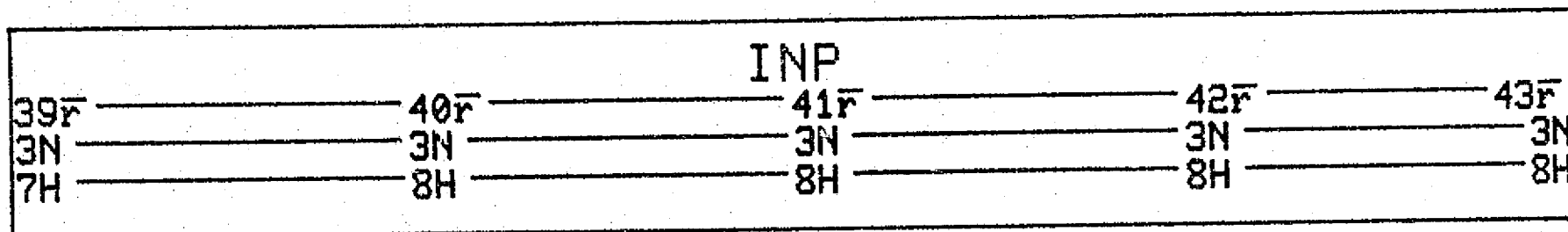


DAY 131 1977

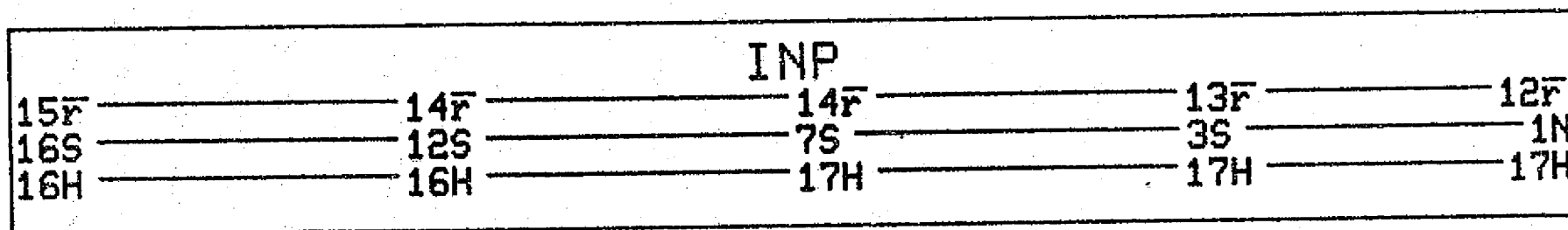


DAY 132 1977

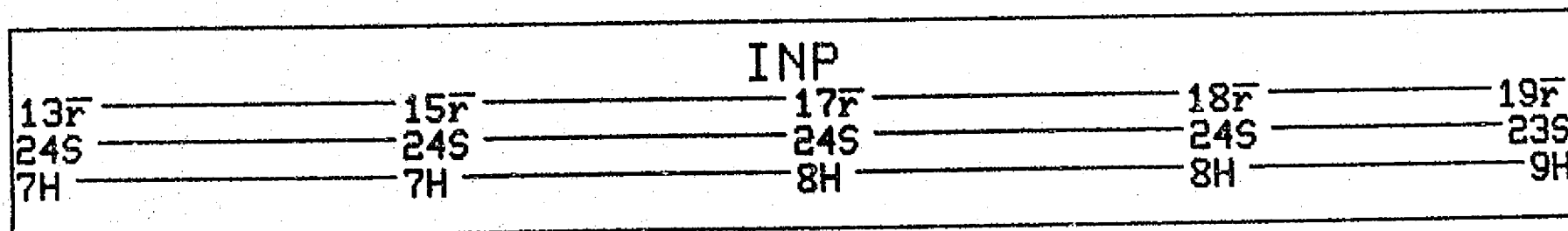
MOON



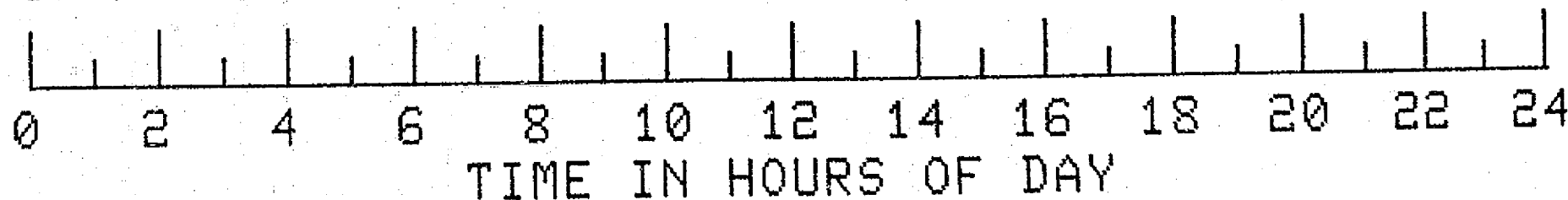
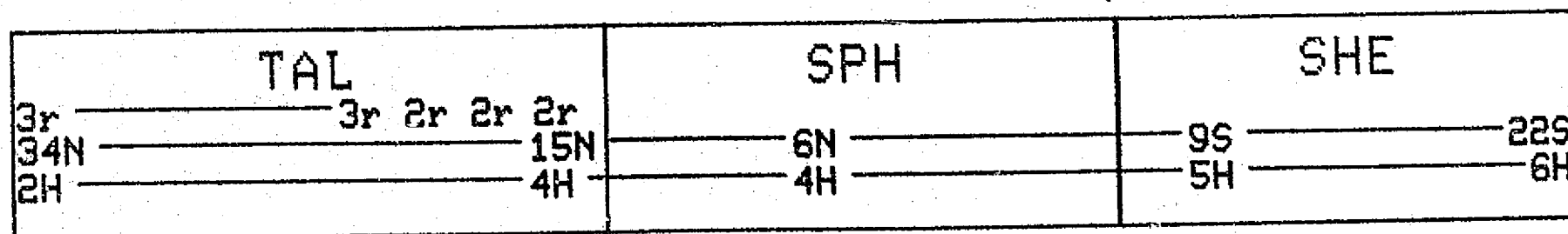
IMP-J



IMP-H

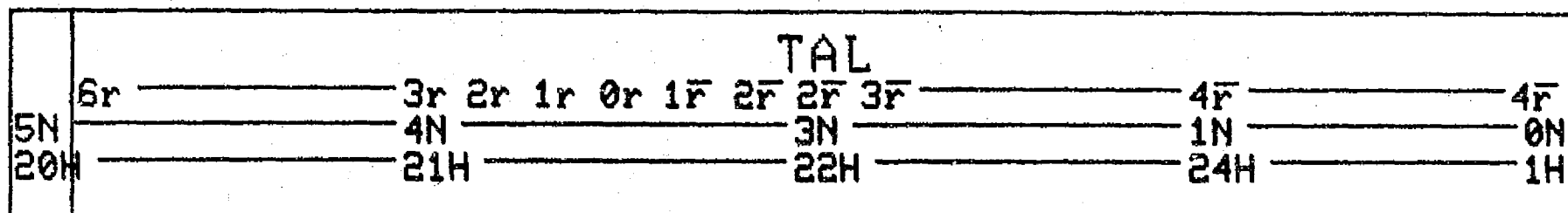


VELA
-5B

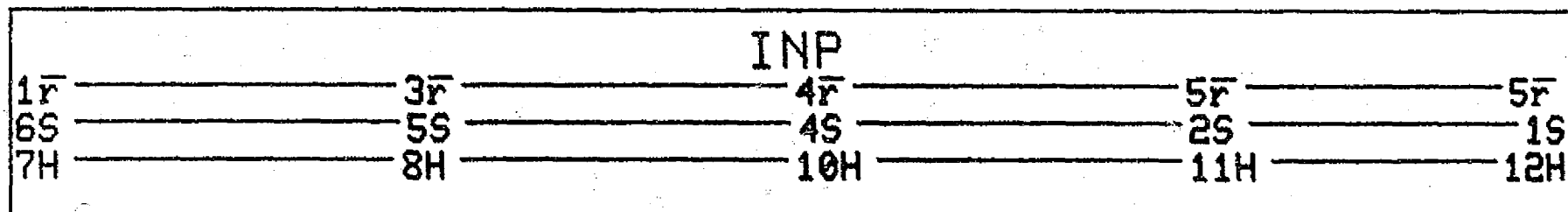


DAY 132 1977

SOL
RAD
-11A

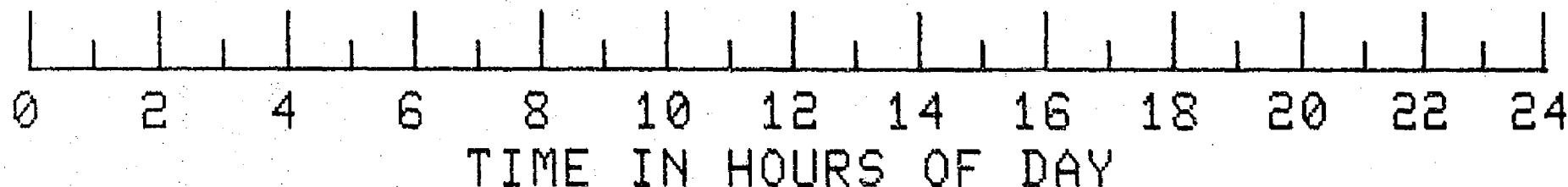
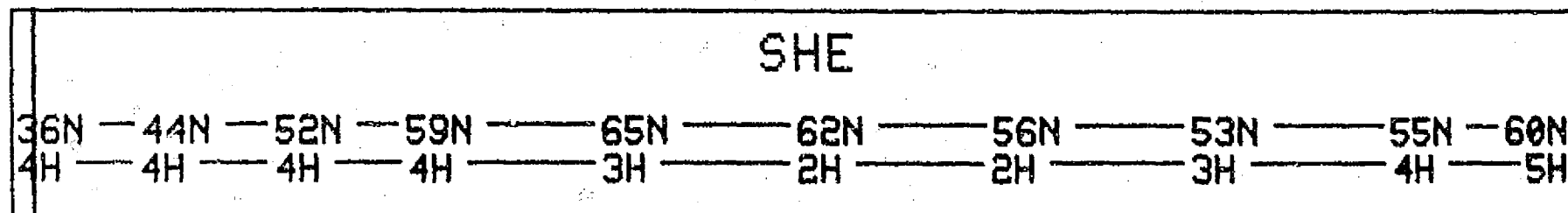


SOL
RAD
-11B



P

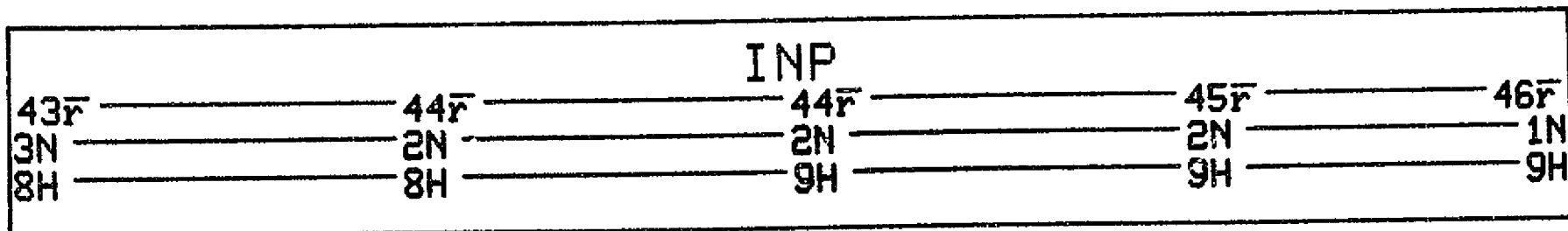
HAWK
EYE-1



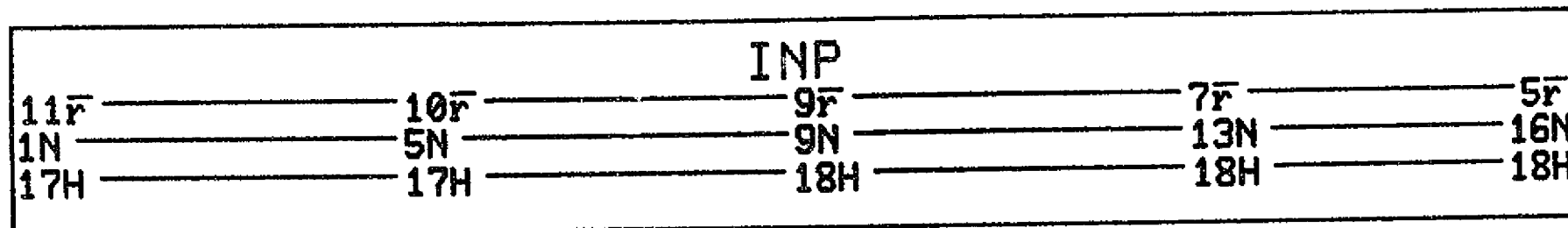
6-7

DAY 133 1977

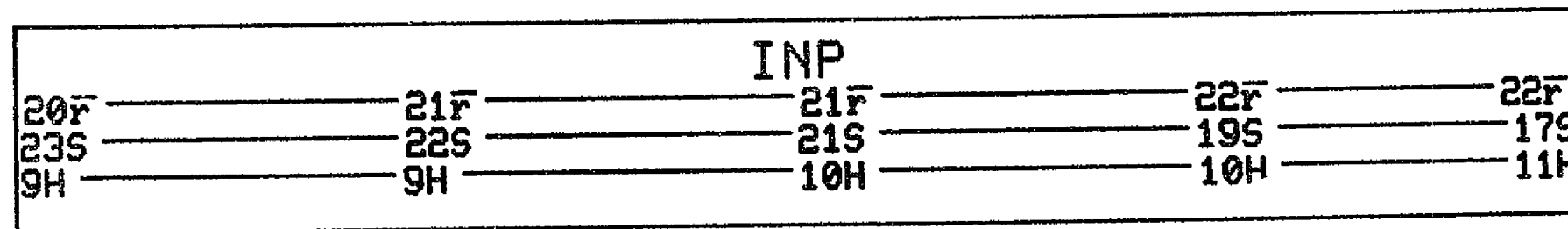
MOON



IMP-J

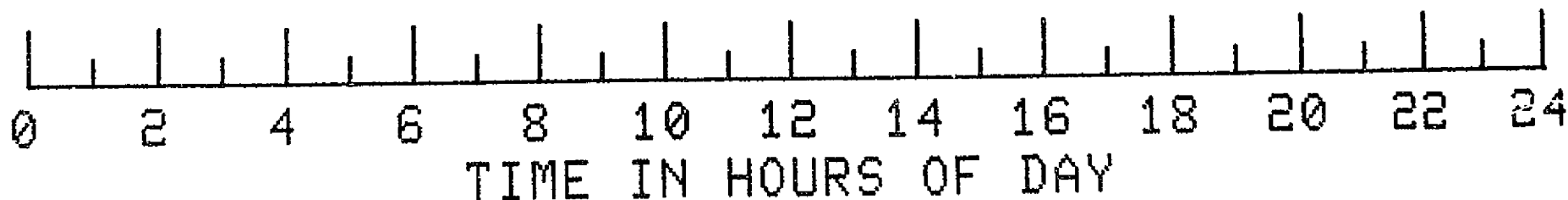
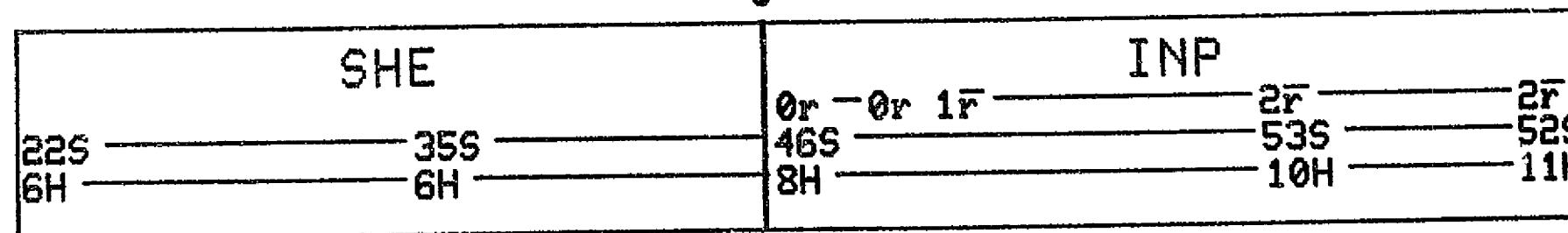


IMP-H

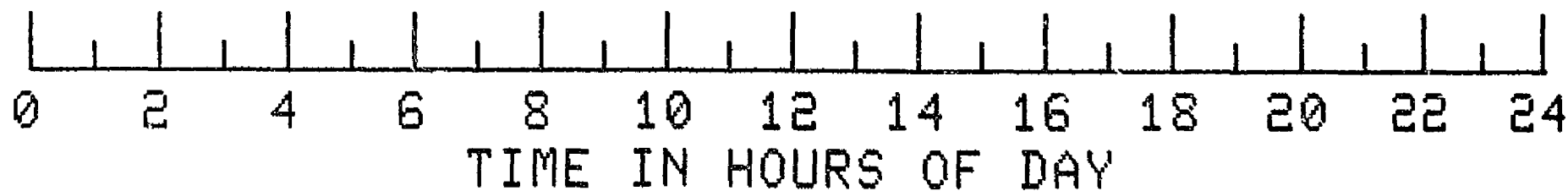
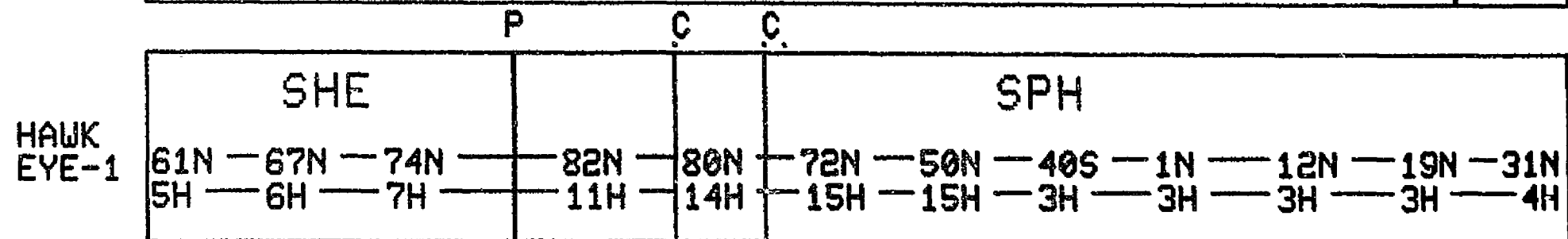
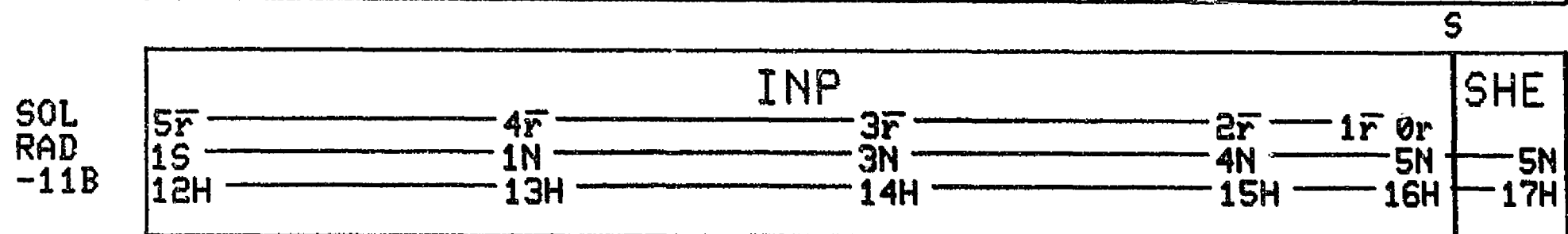
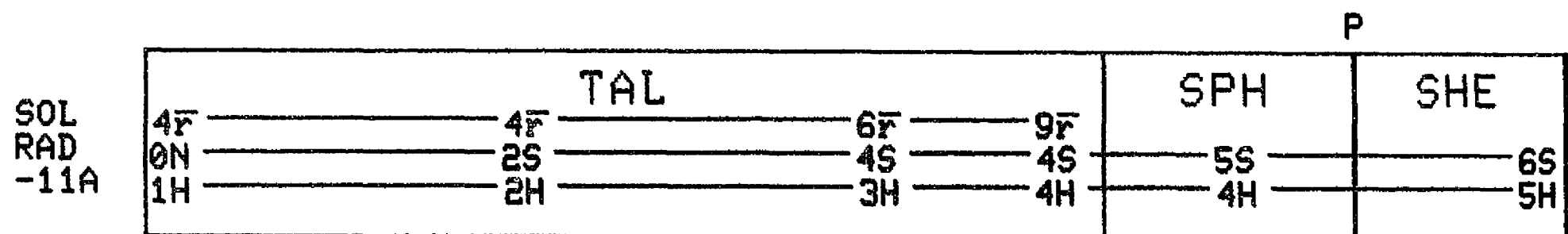


S

VELA
-5B

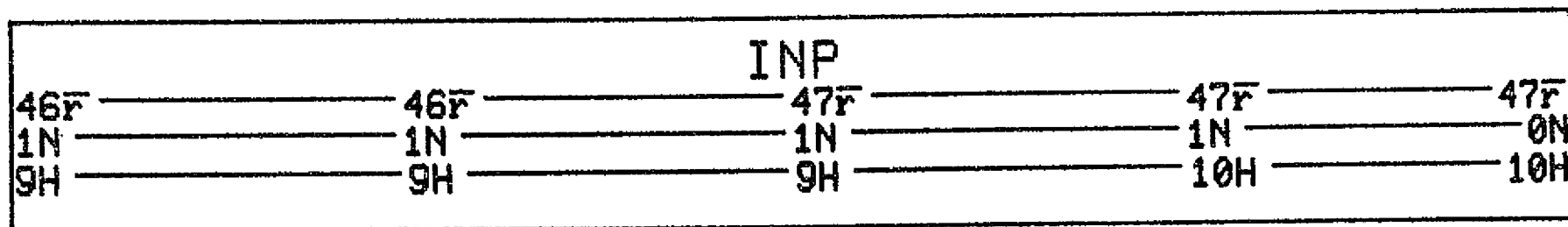


DAY 133 1977



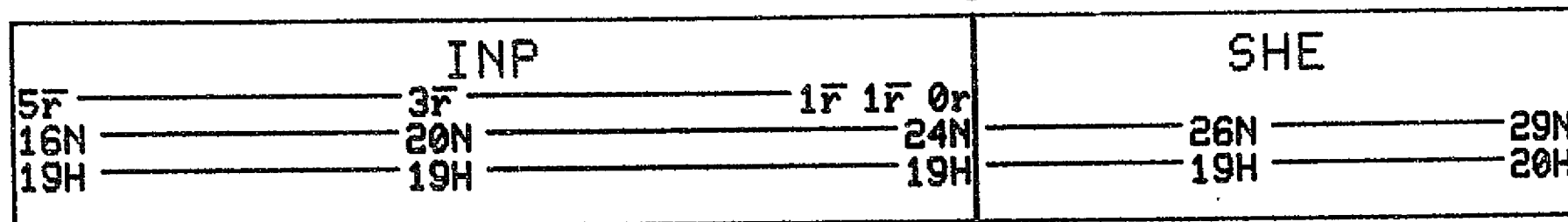
DAY 134 1977

MOON

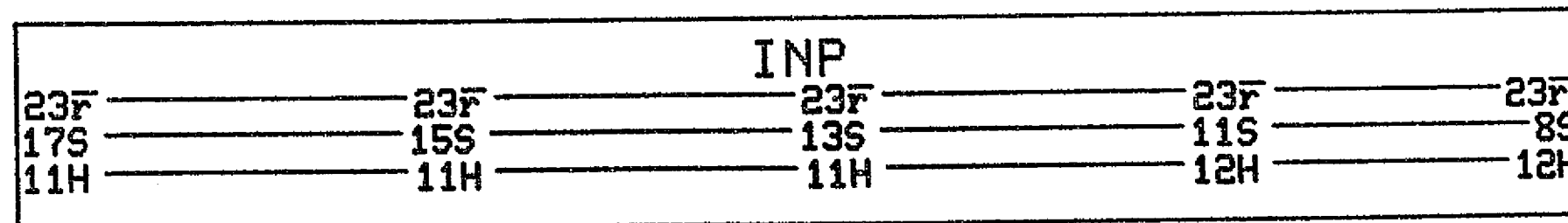


S

IMP-J

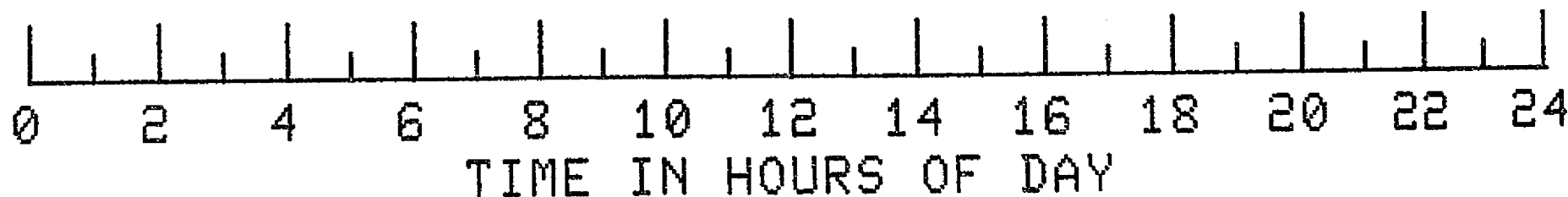
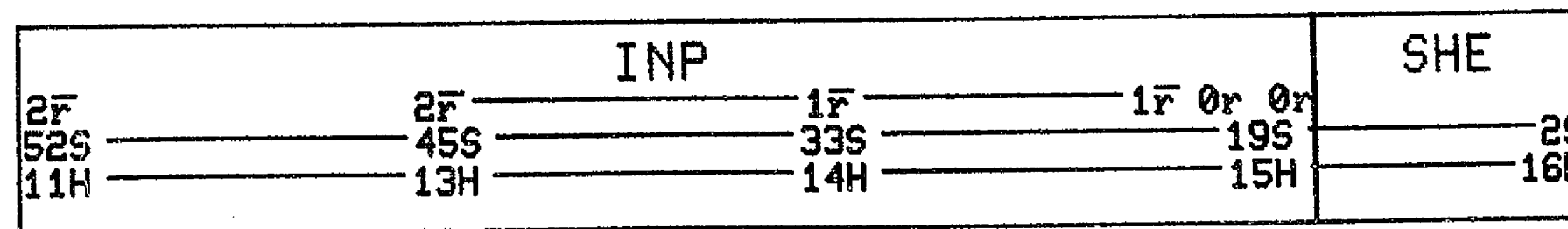


IMP-H

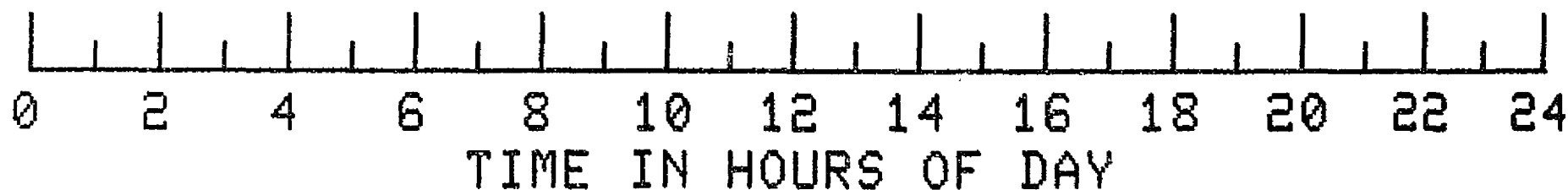
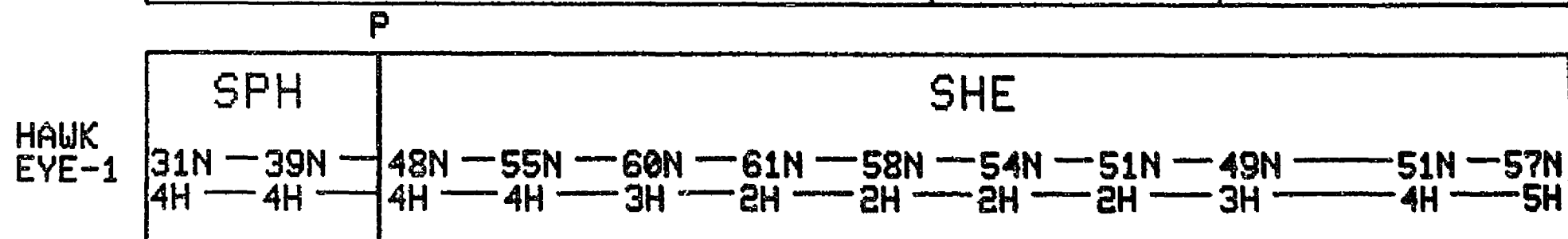
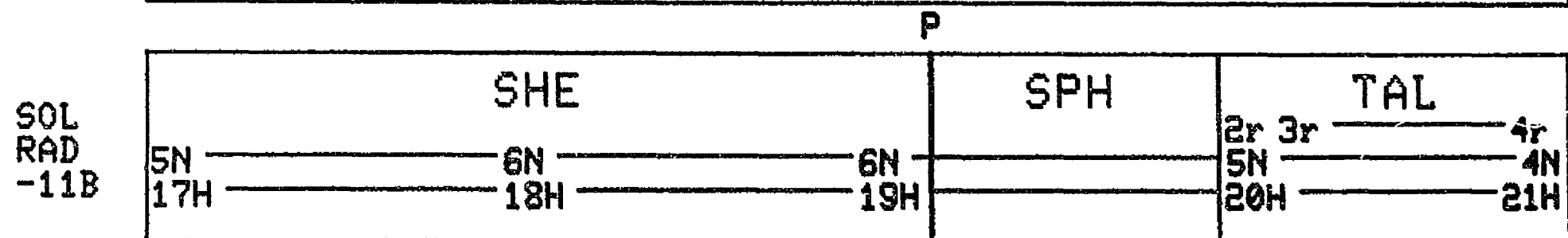
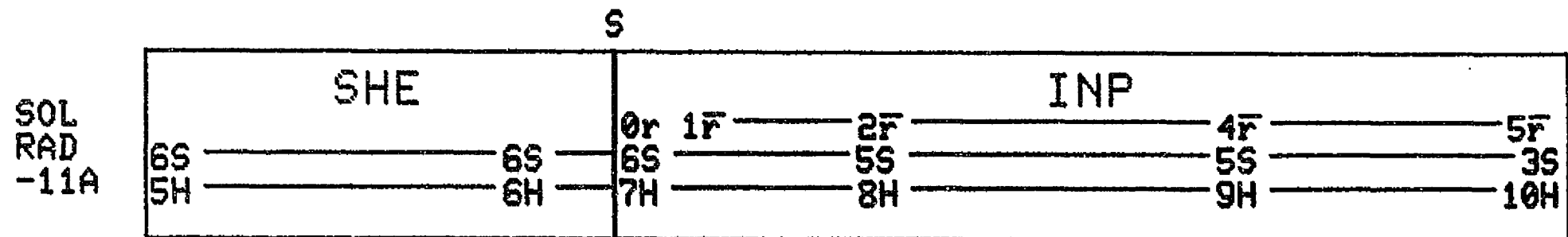


S

VELA
-5B

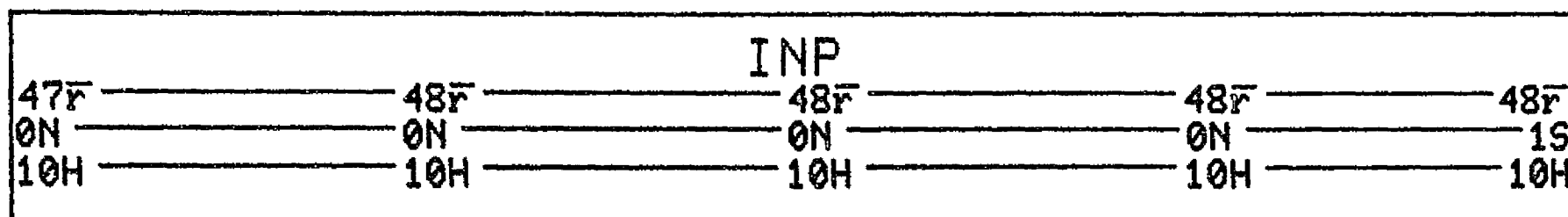


DAY 134 1977

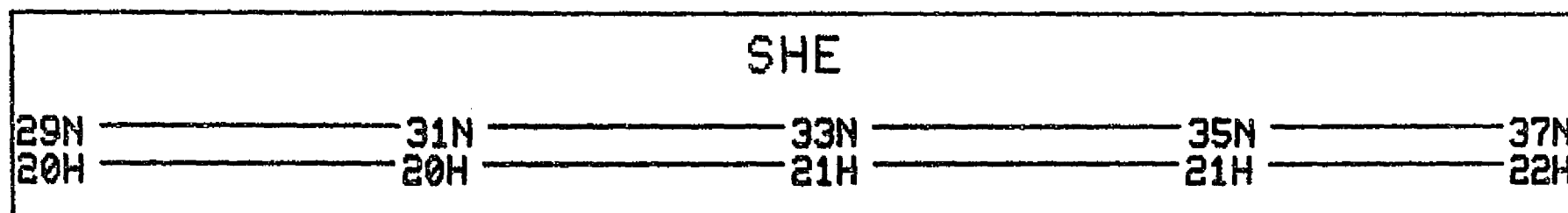


DAY 135 1977

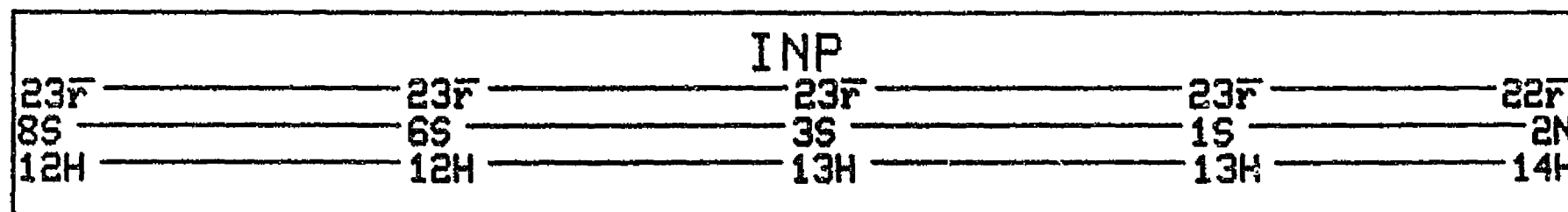
MOON



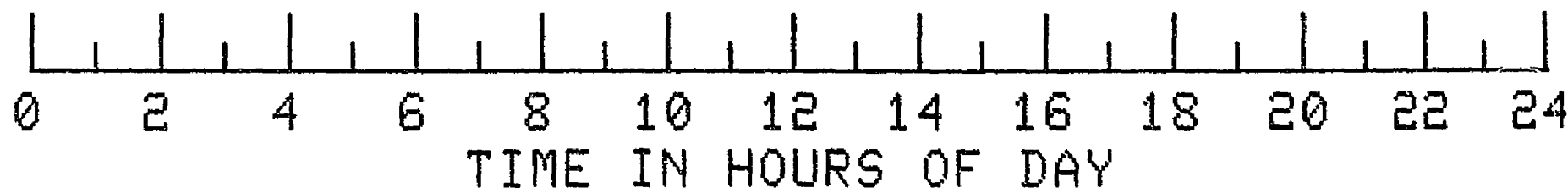
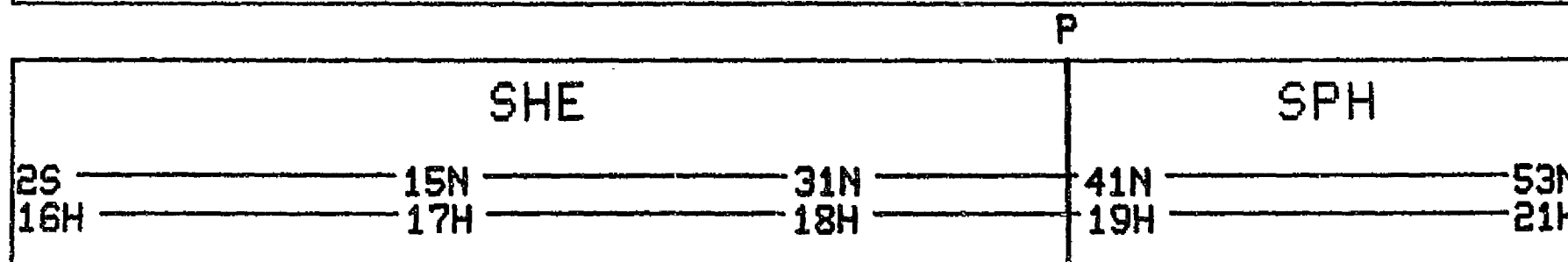
IMP-J



IMP-H

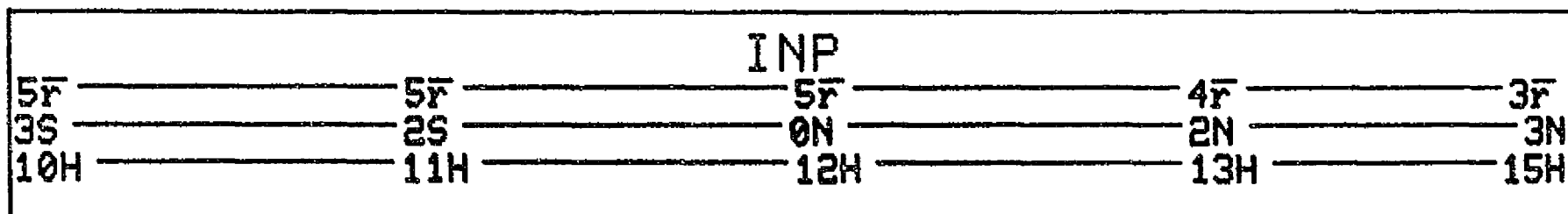


VELA
-5B

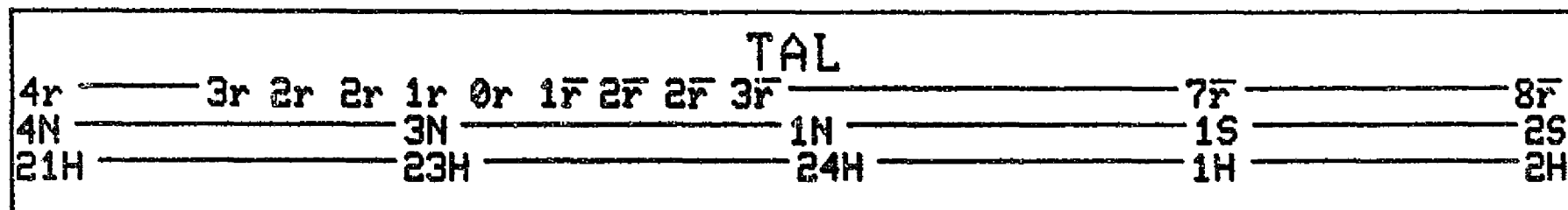


DAY 135 1977

SOL
RAD
-11A



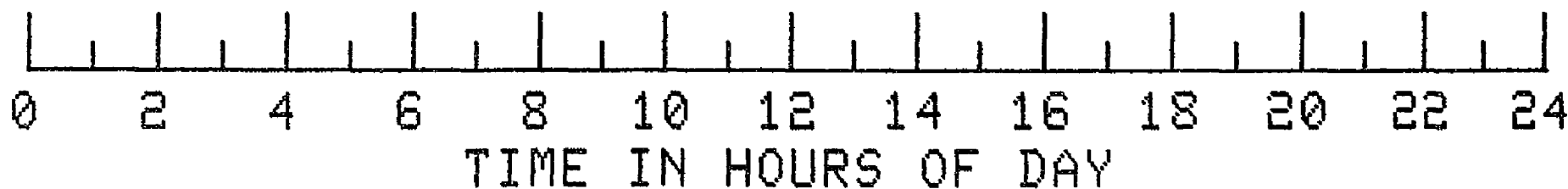
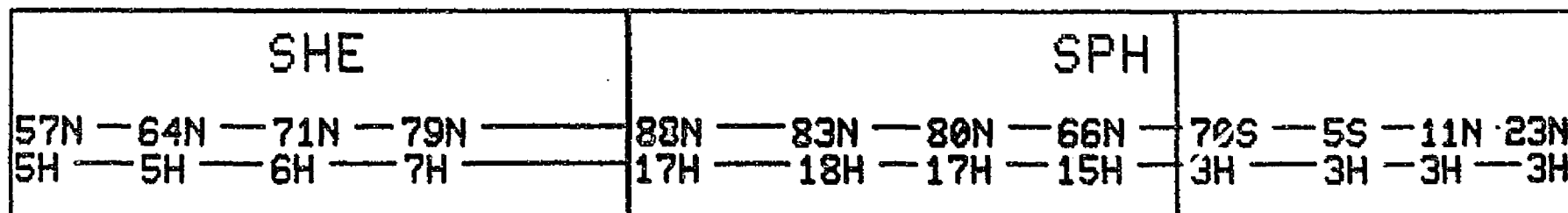
SOL
RAD
-11B



P

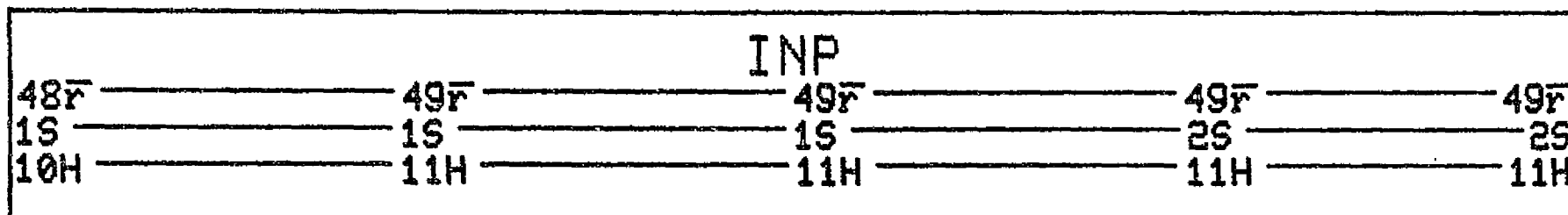
C

HAWK
EYE-1

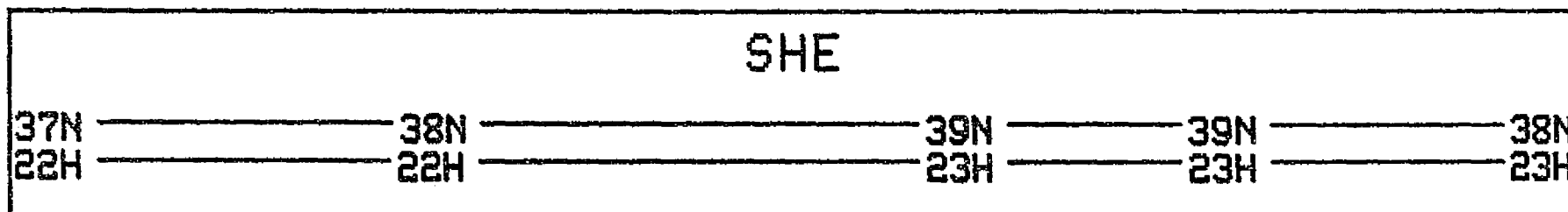


DAY 136 1977

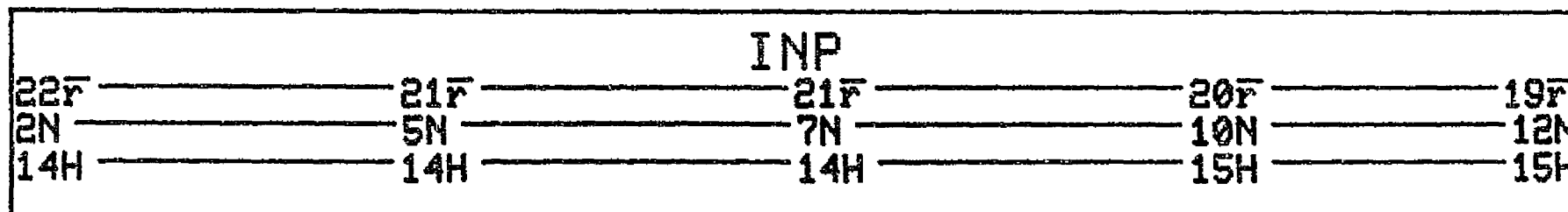
MOON



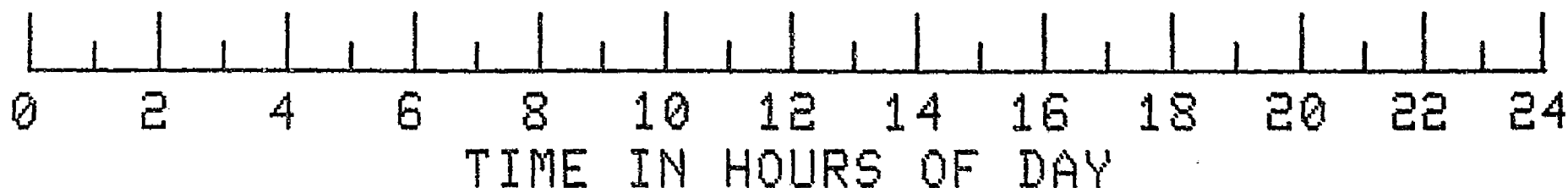
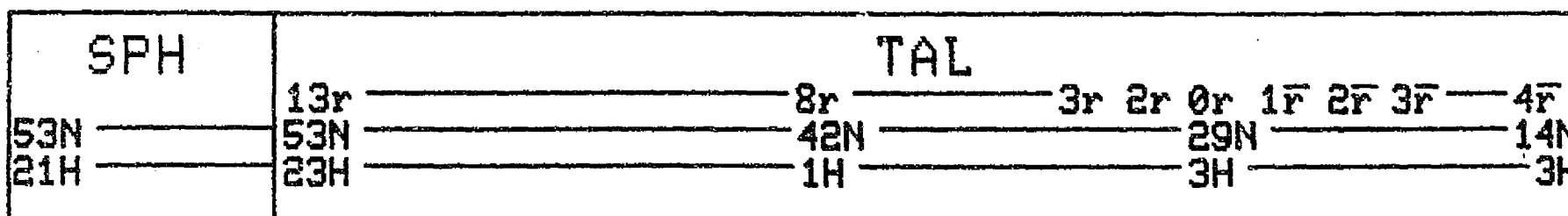
IMP-J



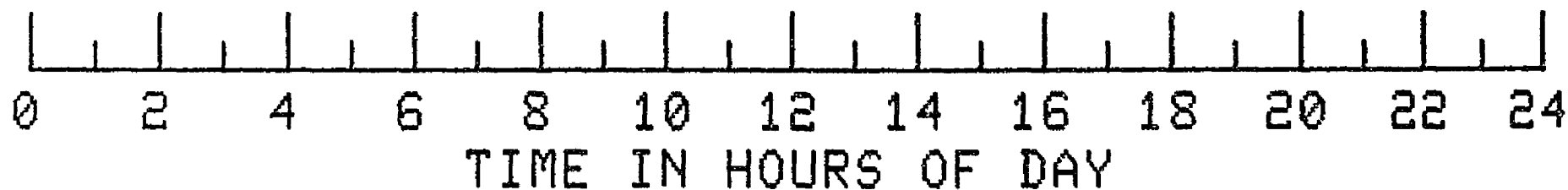
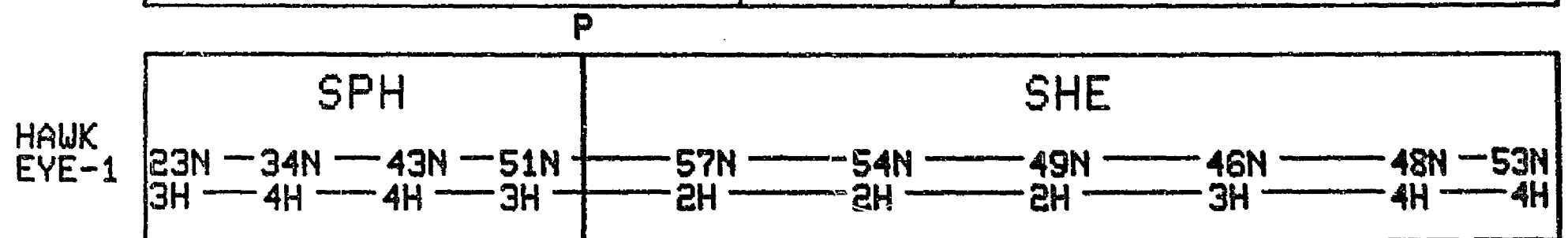
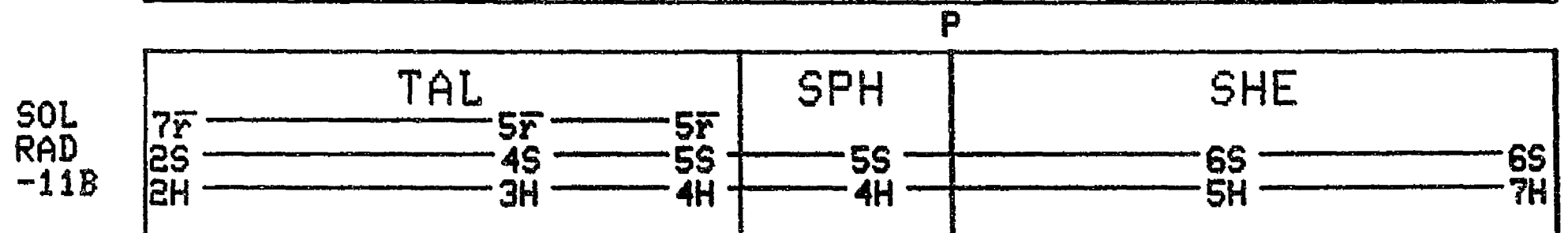
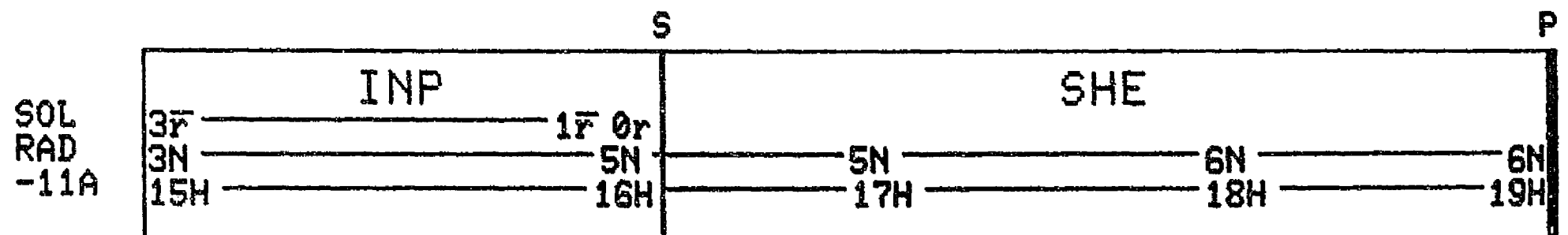
IMP-H



VELA
-5B

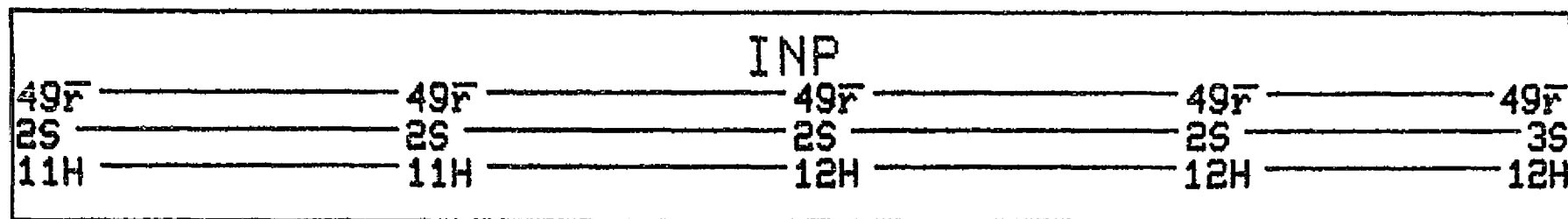


DAY 136 1977

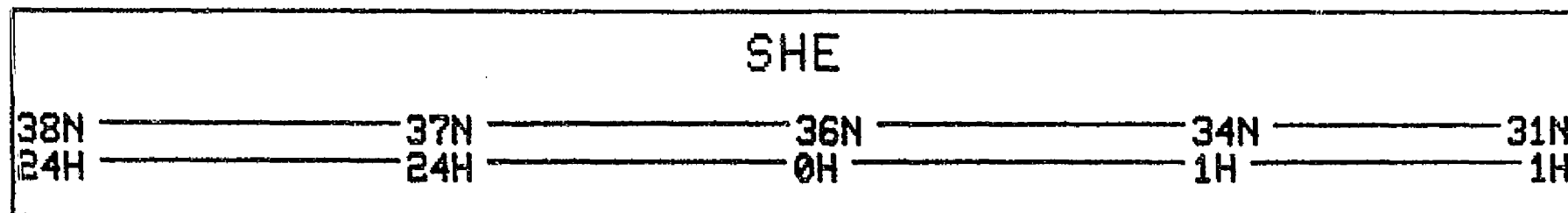


DAY 137 1977

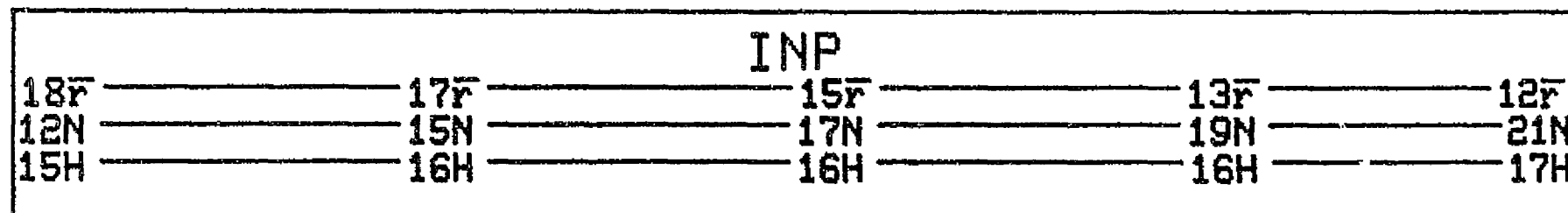
MOON



IMP-J

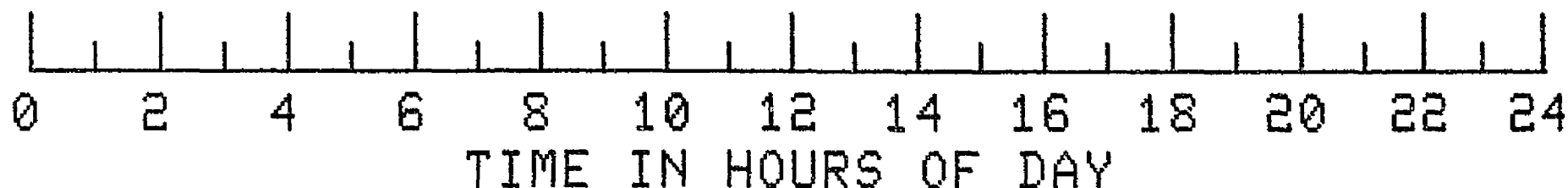
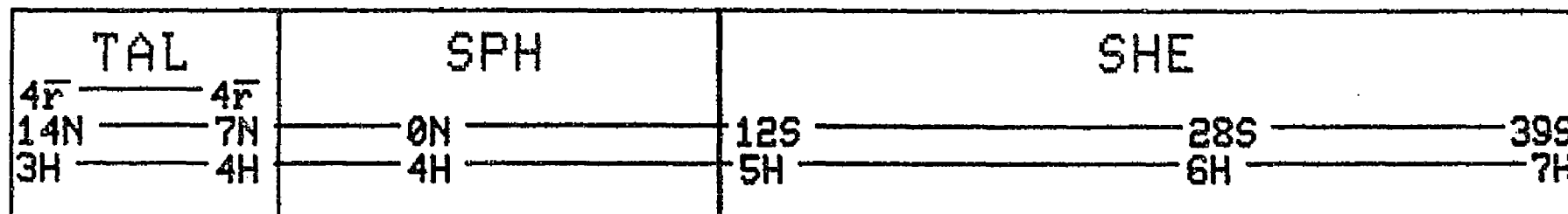


IMP-H



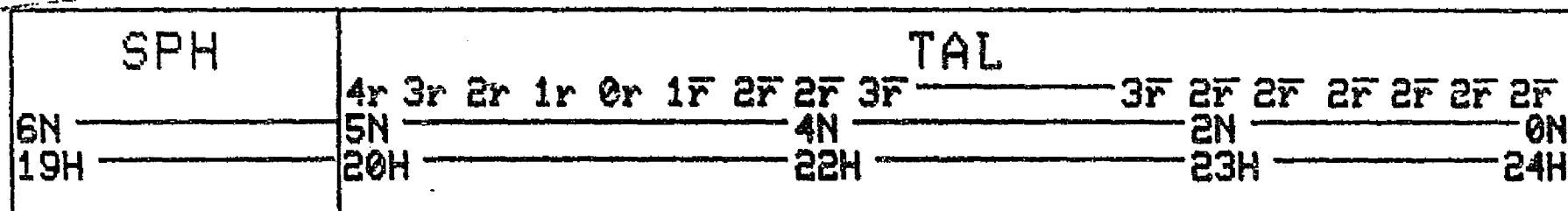
P

VELA
-5B



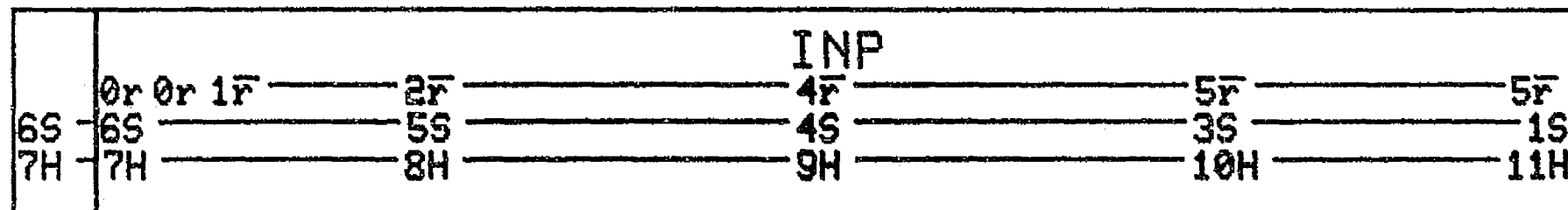
DAY 137 1977

SOL
RAD
-11A



S

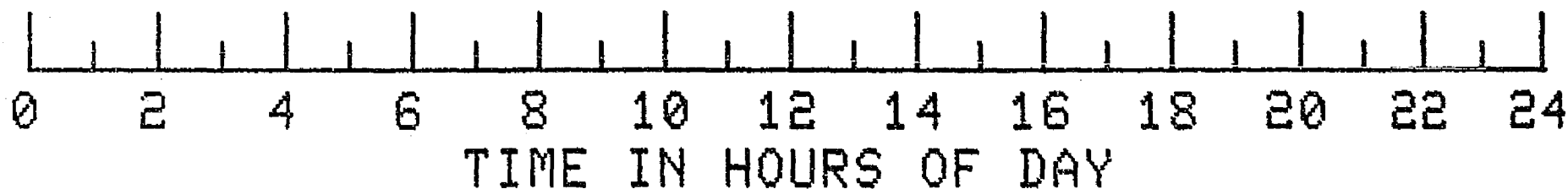
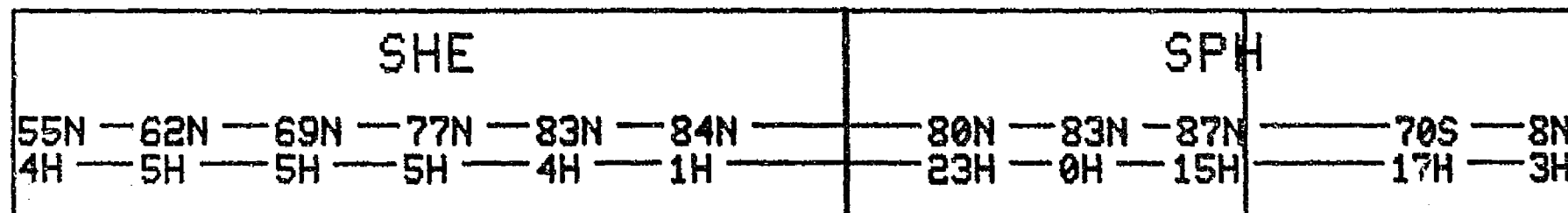
SOL
RAD
-11B



P

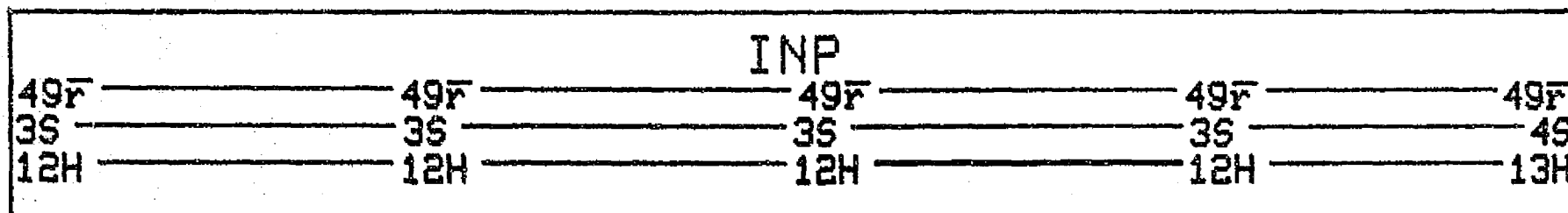
C

HAWK
EYE-1

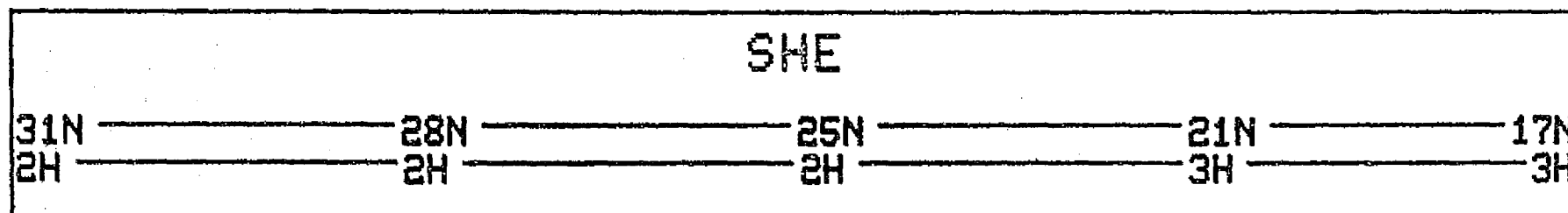


DAY 138 1977

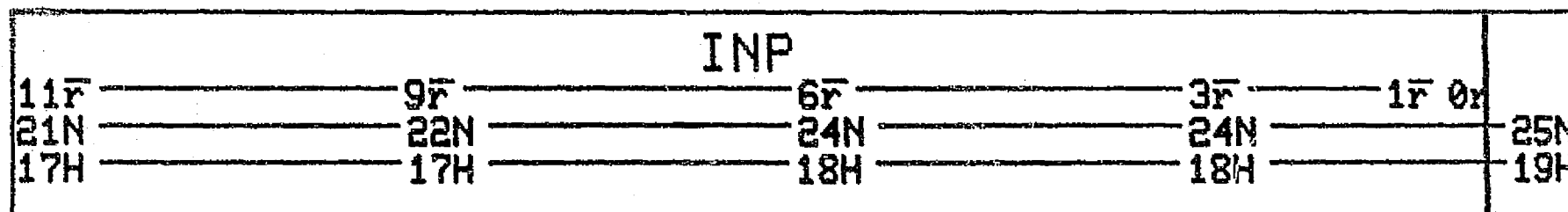
MOON



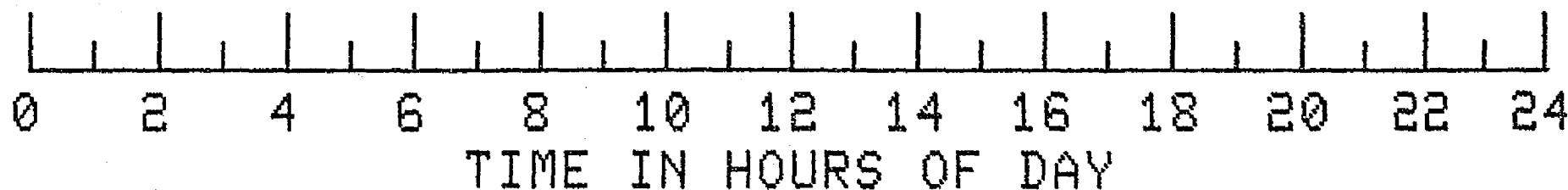
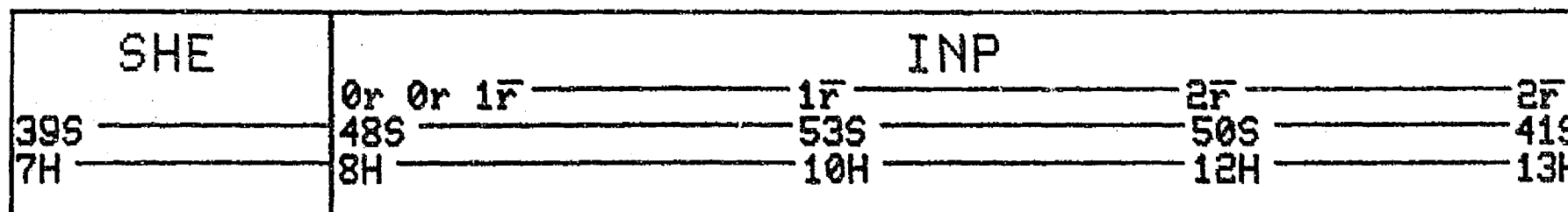
IMP-J



IMP-H

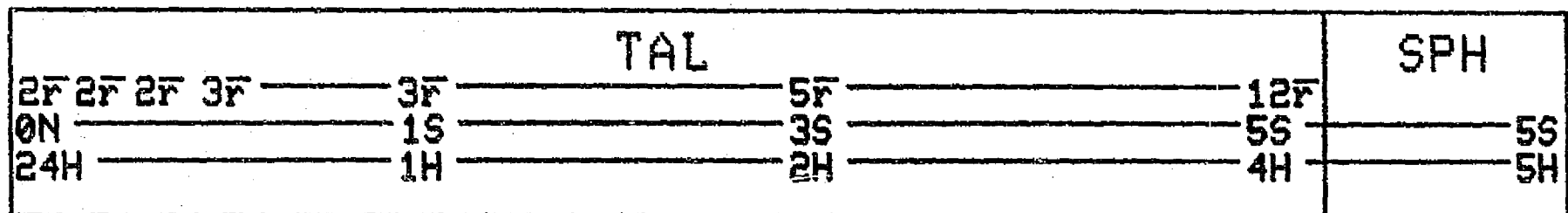


VELA
-5B

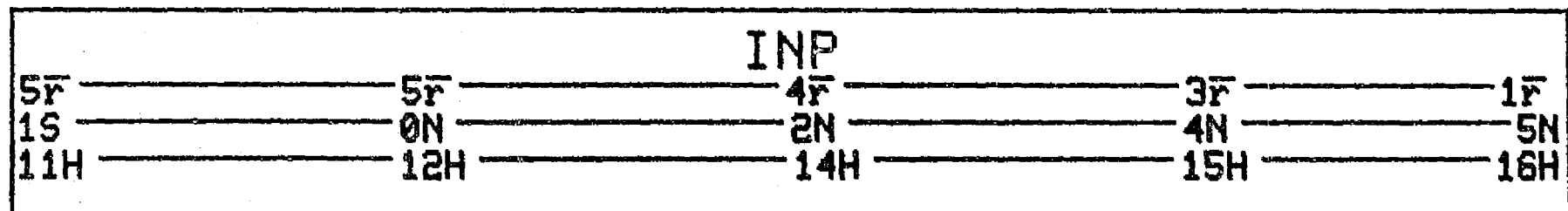


DAY 138 1977

SOL
RAD
-11A

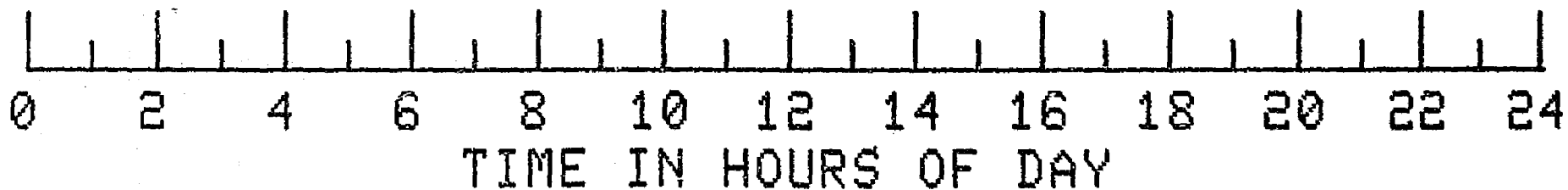
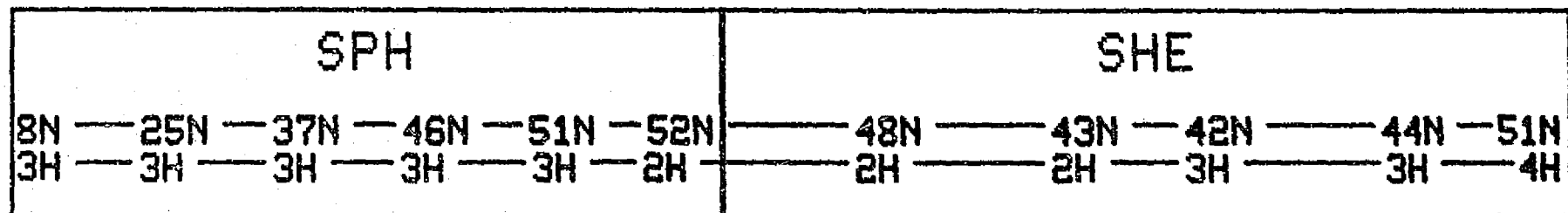


SOL
RAD
-11B

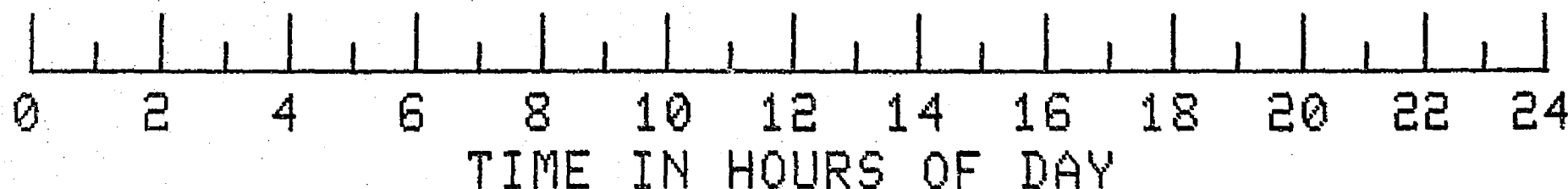
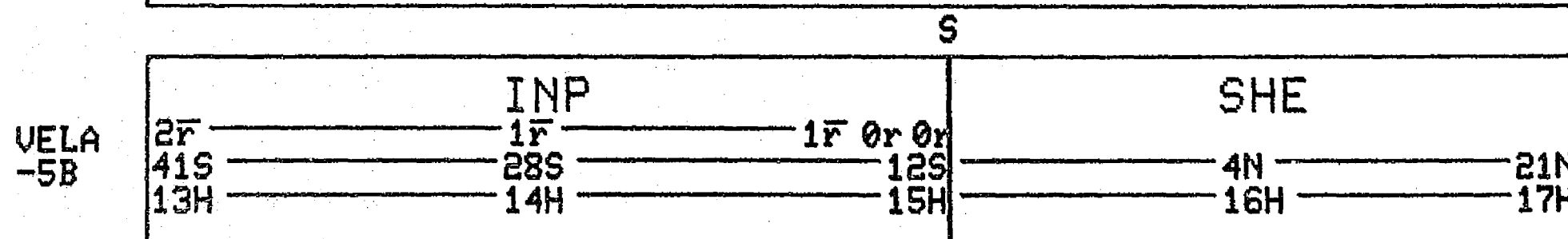
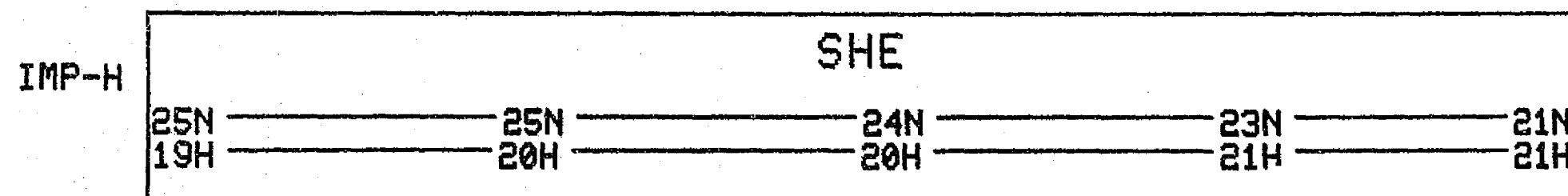
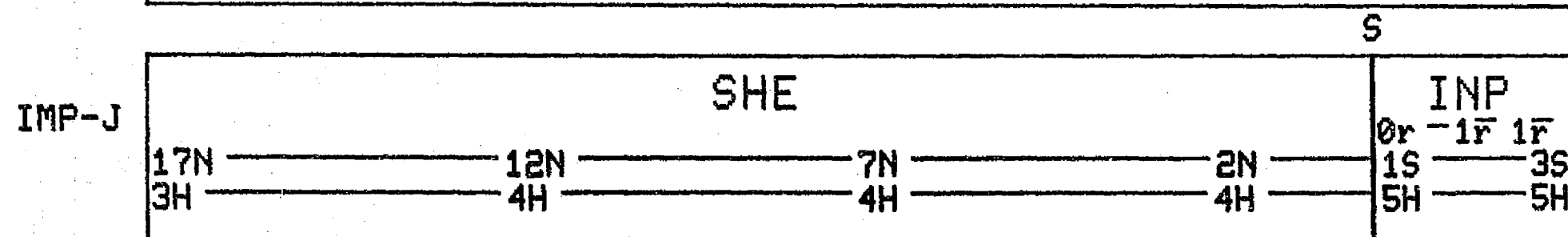
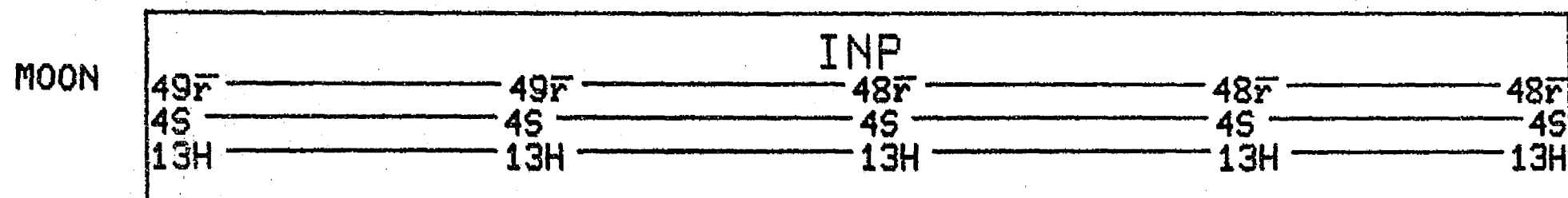


P

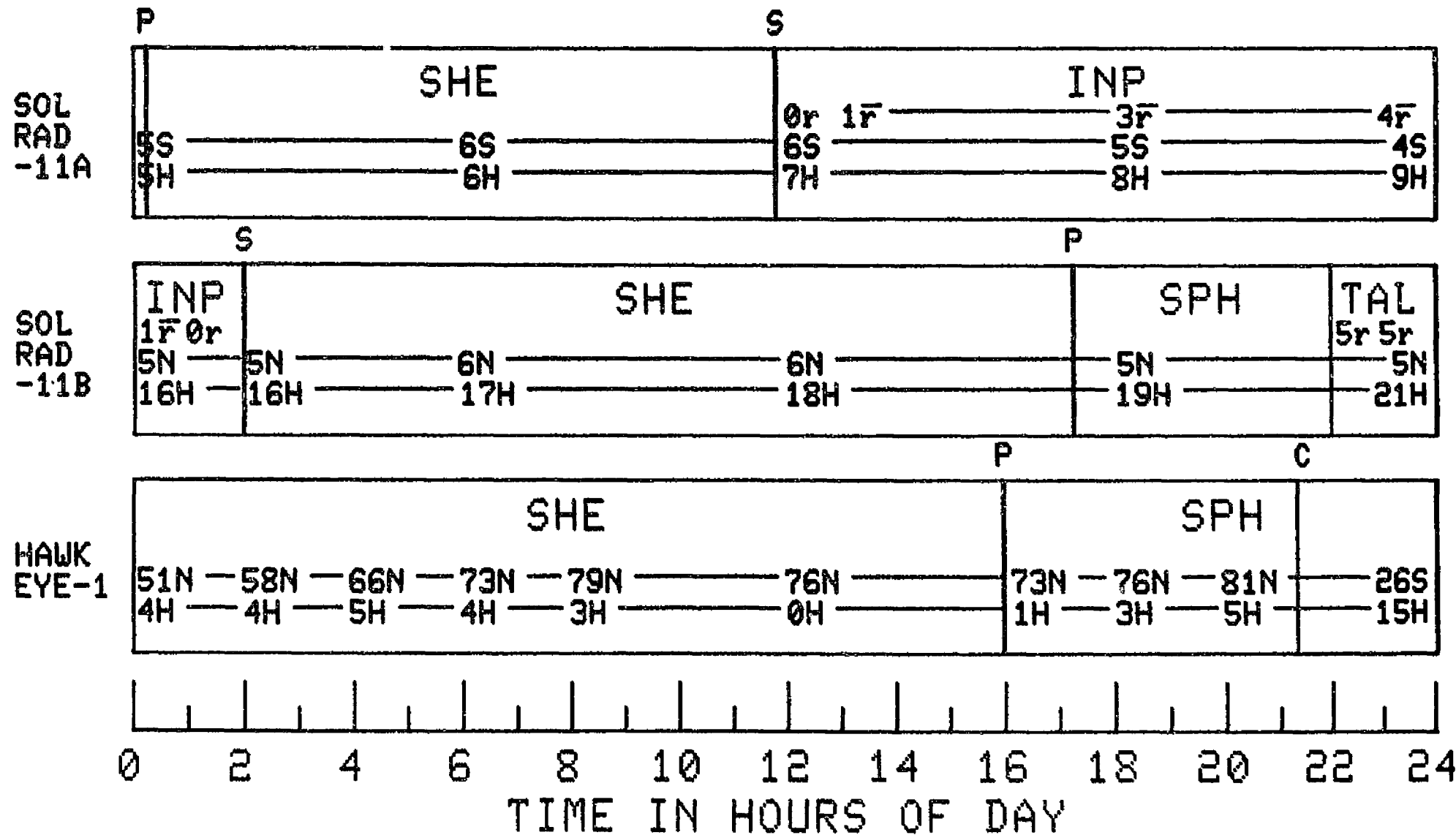
HAWK
EYE-1



DAY 139 1977

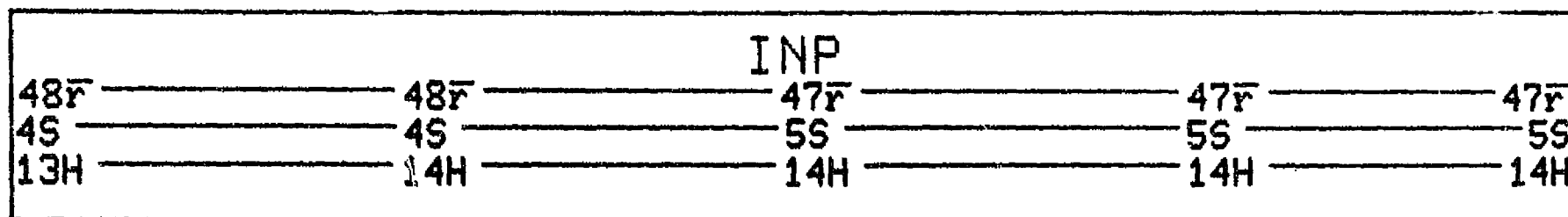


DAY 139 1977

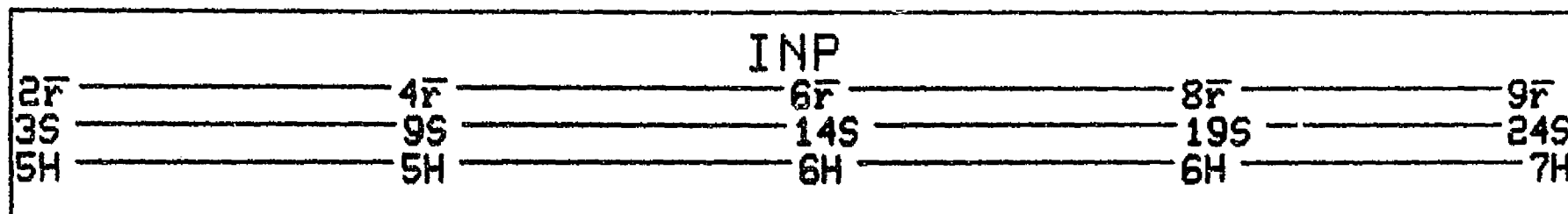


DAY 140 1977

MOON

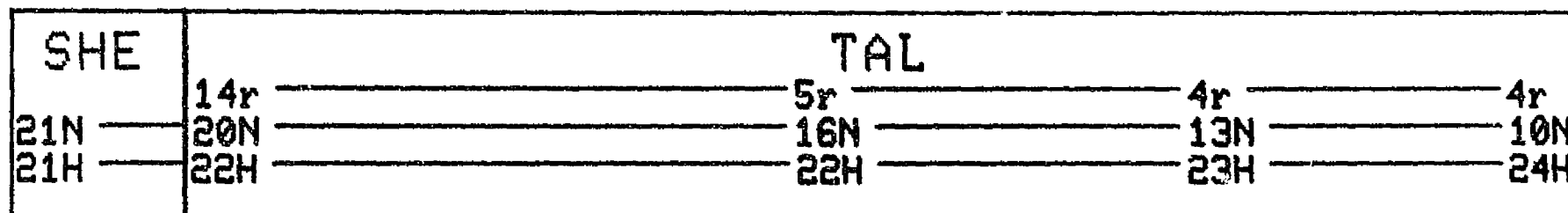


IMP-J



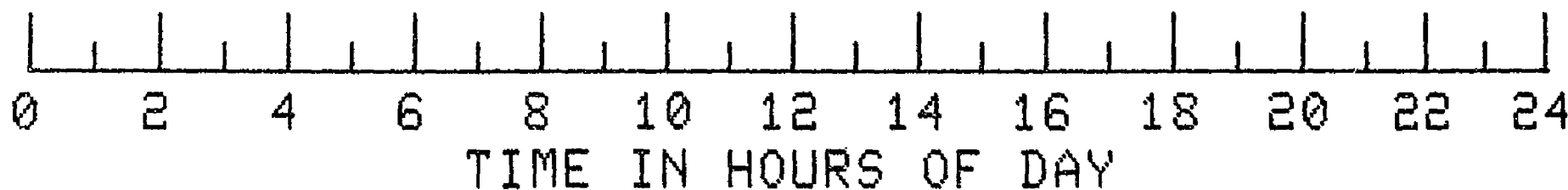
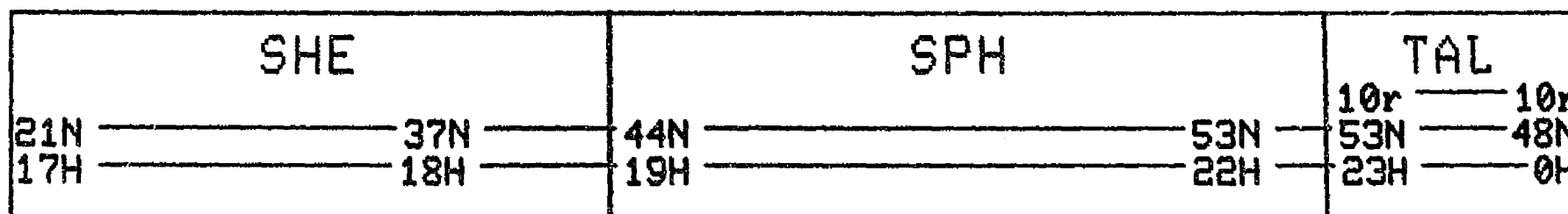
P

IMP-H



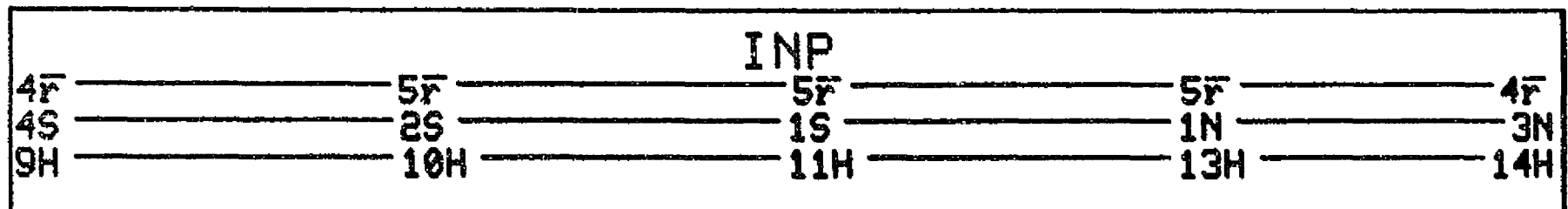
P

VELA
-5B

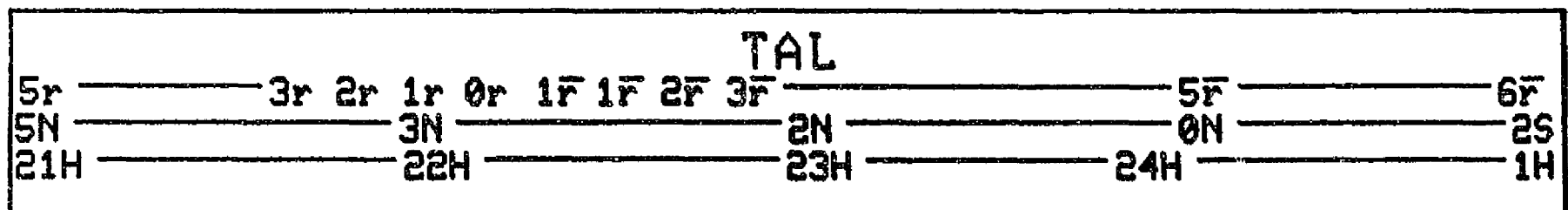


DAY 140 1977

SOL
RAD
-11A

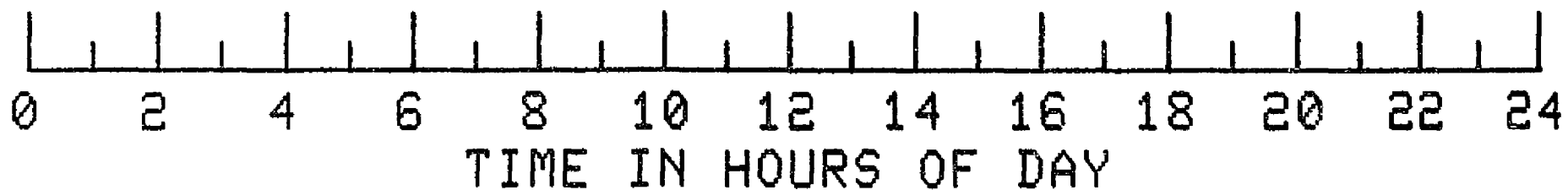
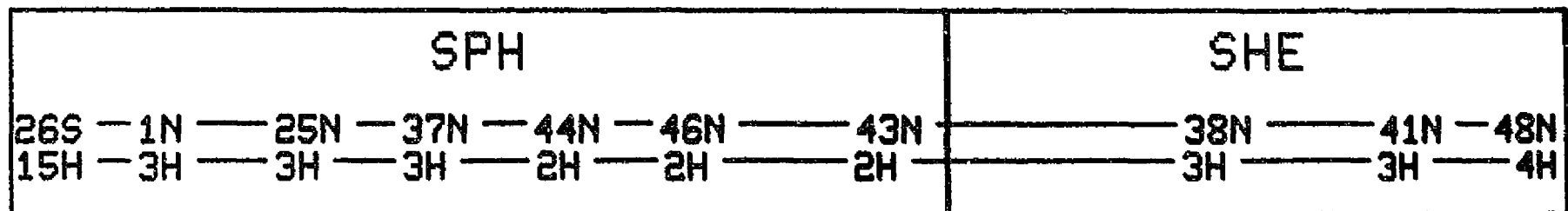


SOL
RAD
-11B



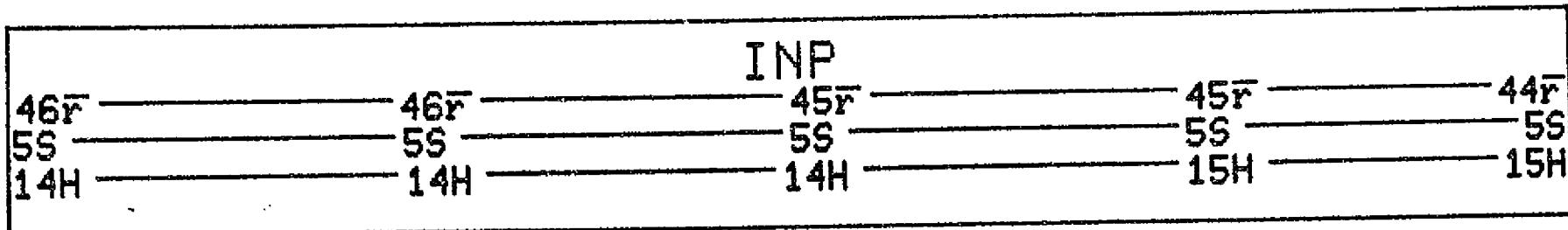
P

HAWK
EYE-1

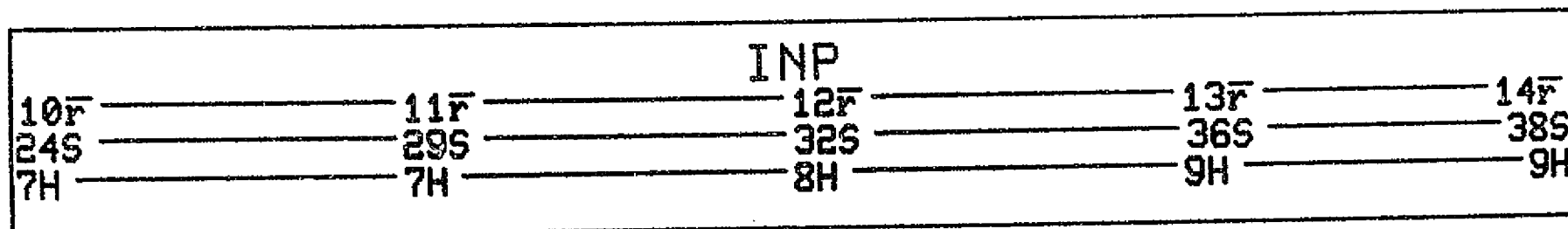


DAY 141 1977

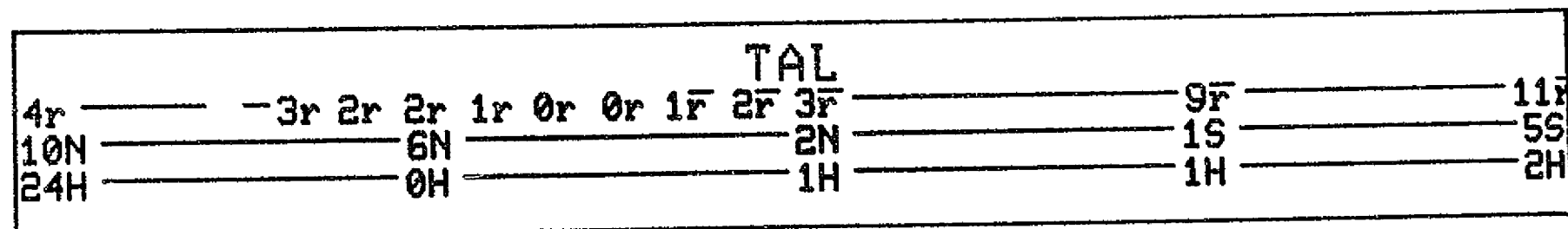
MOON



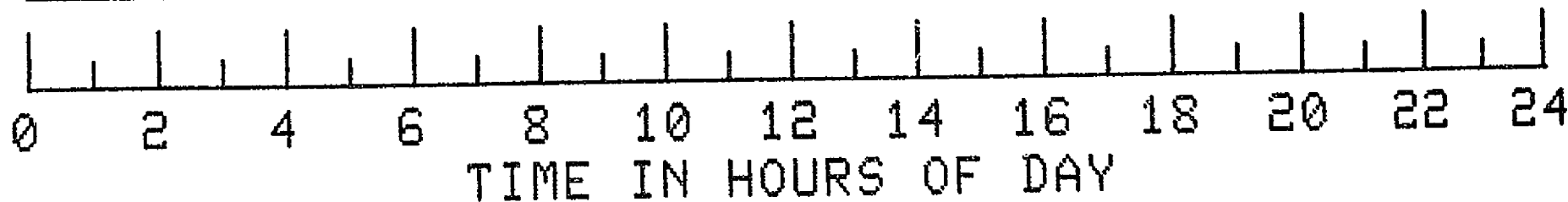
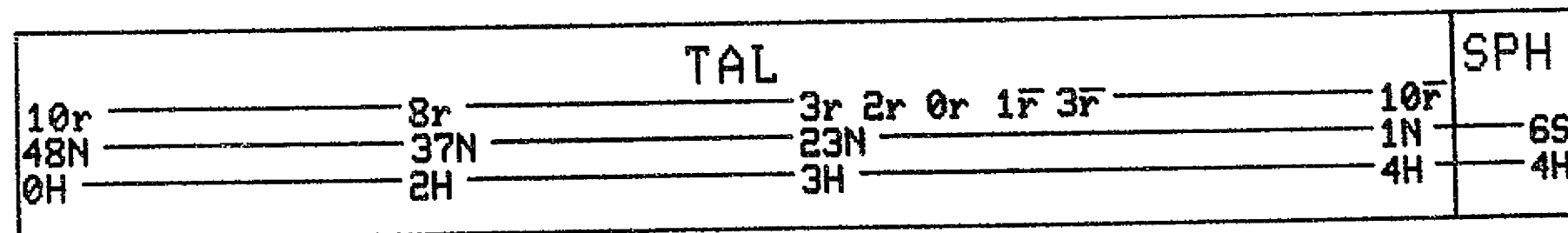
IMP-J



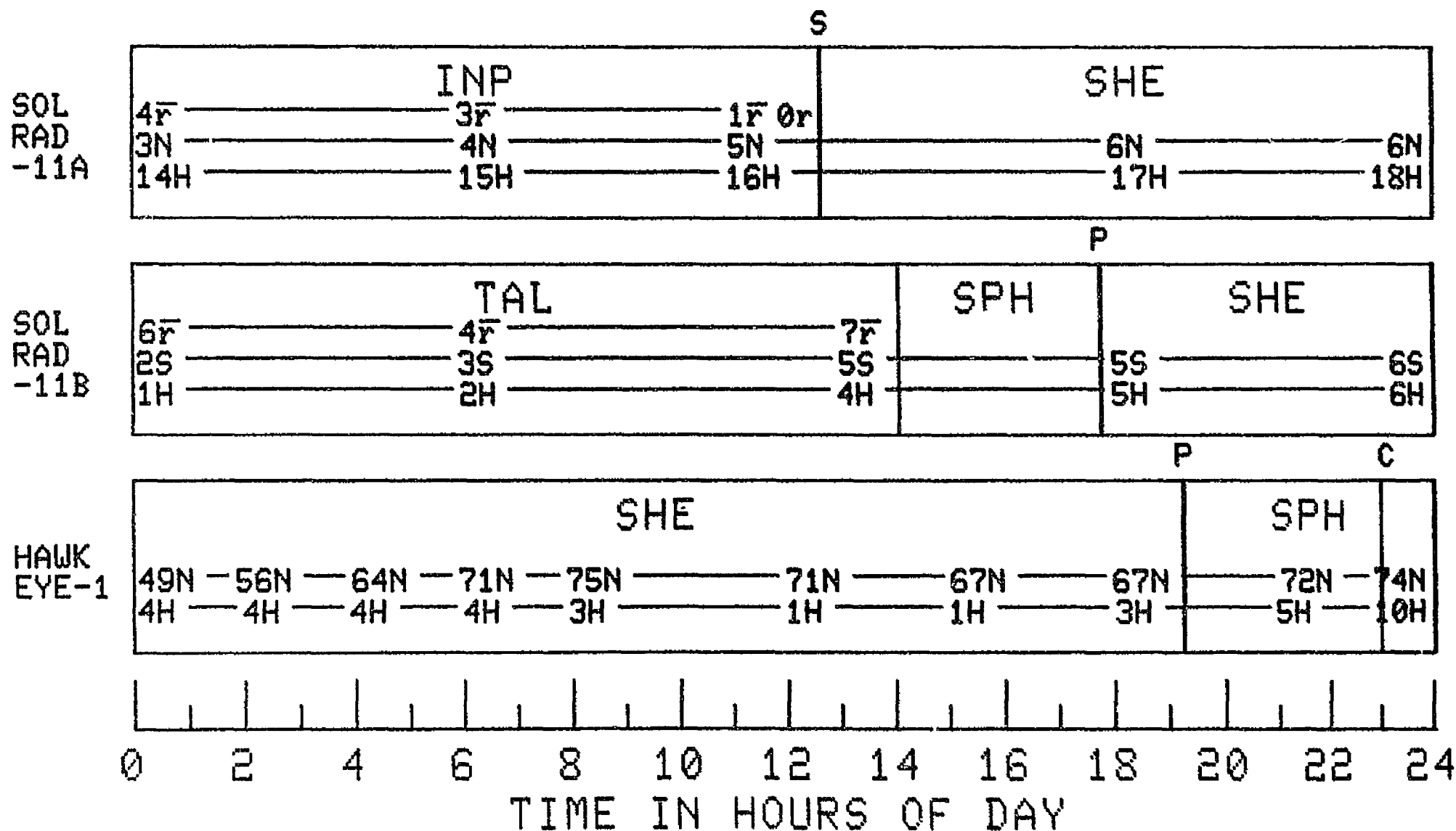
IMP-H



VELA
-5B

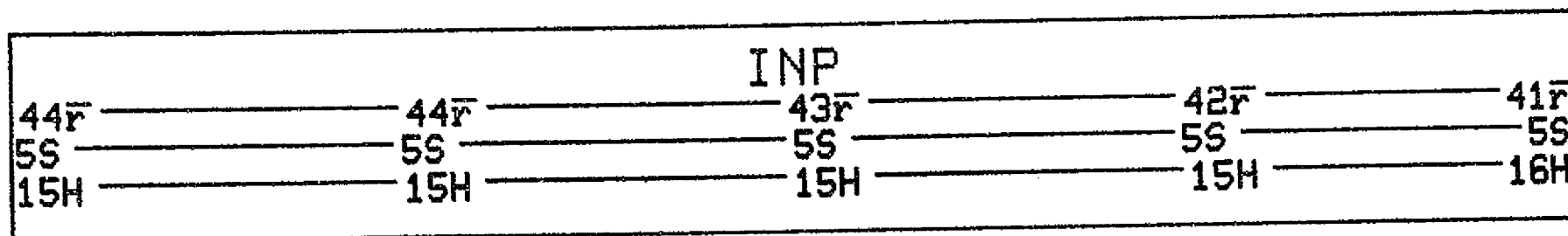


DAY 141 1977

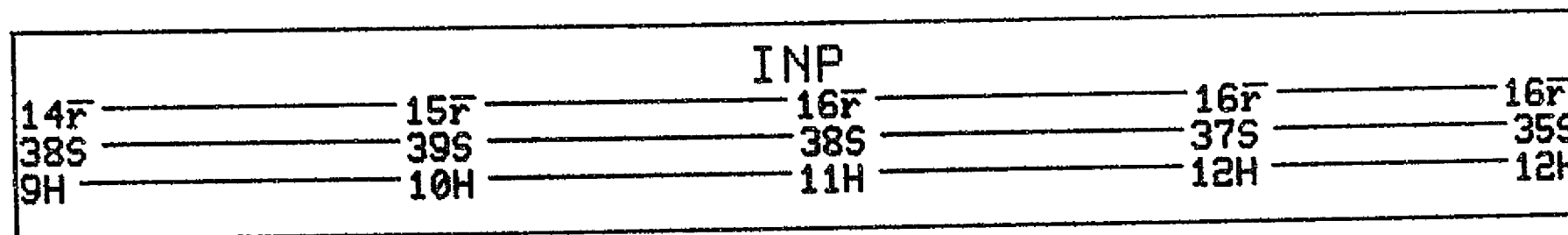


DAY 142 1977

MOON

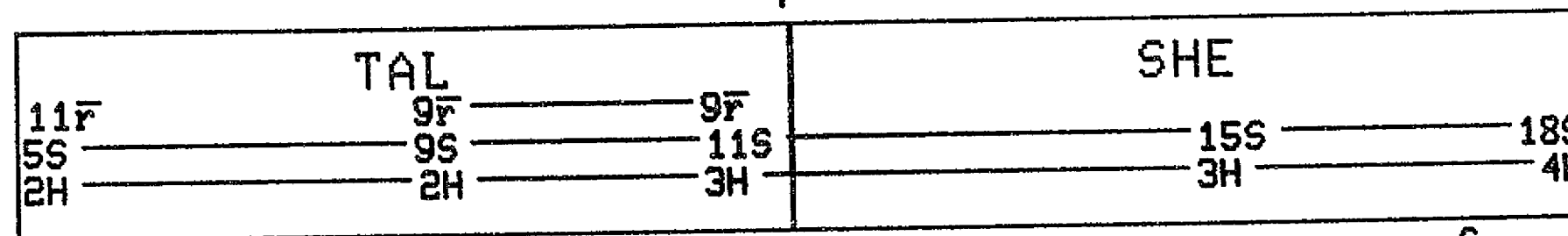


IMP-J



P

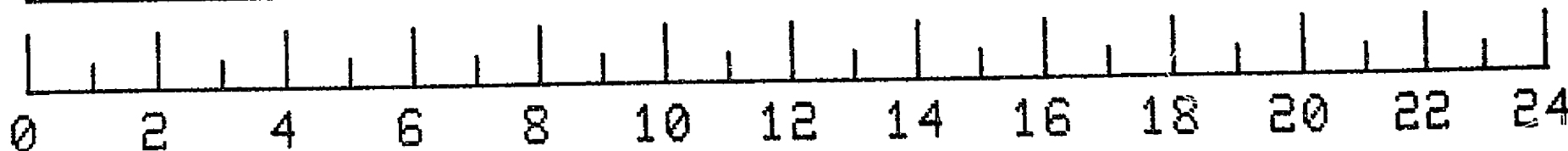
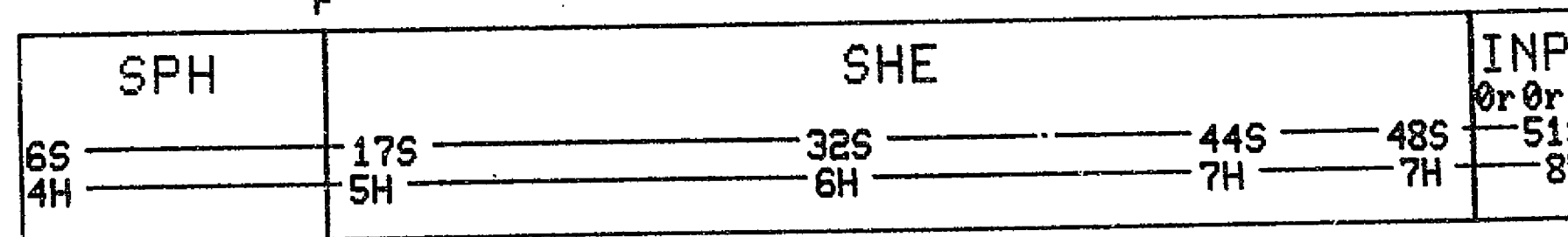
IMP-H



P

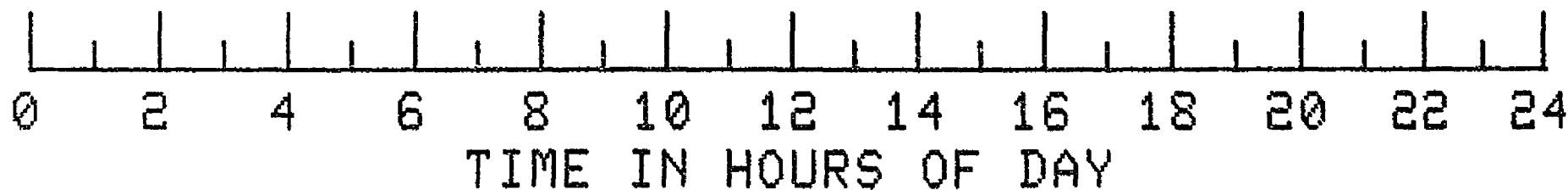
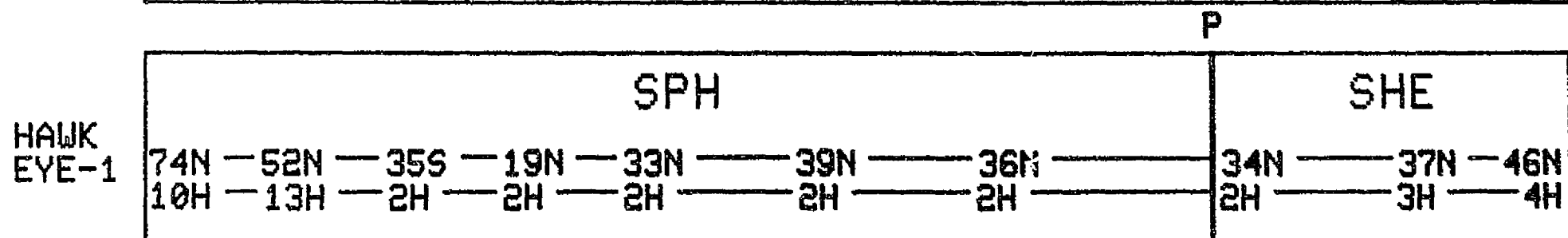
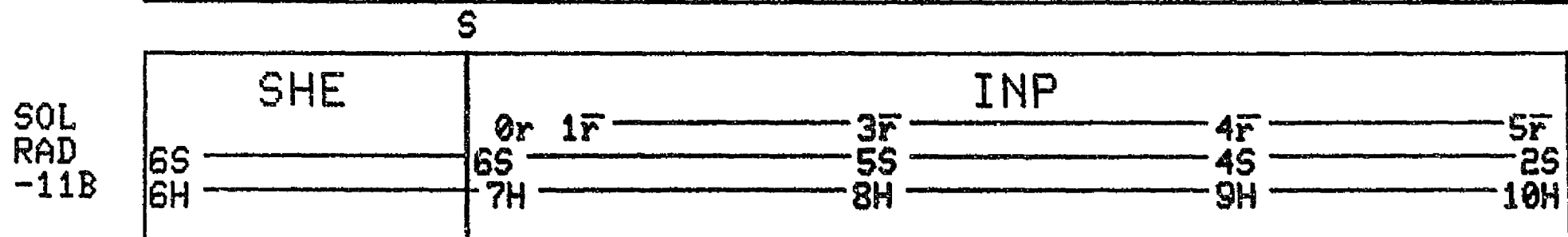
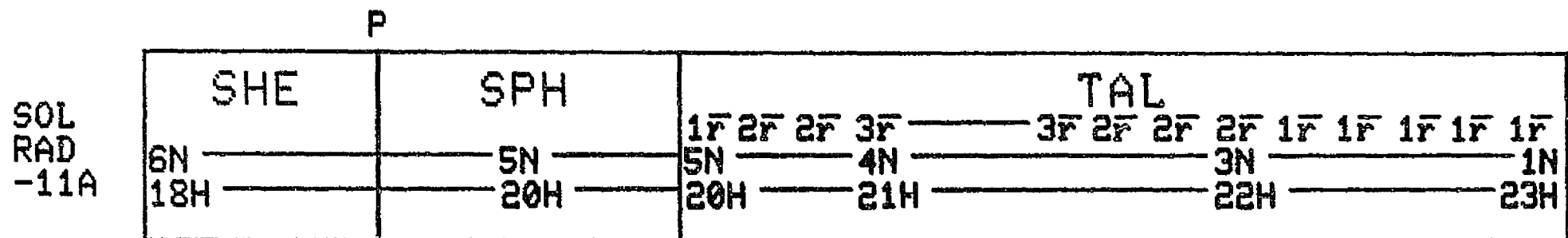
S

VELA
-5B



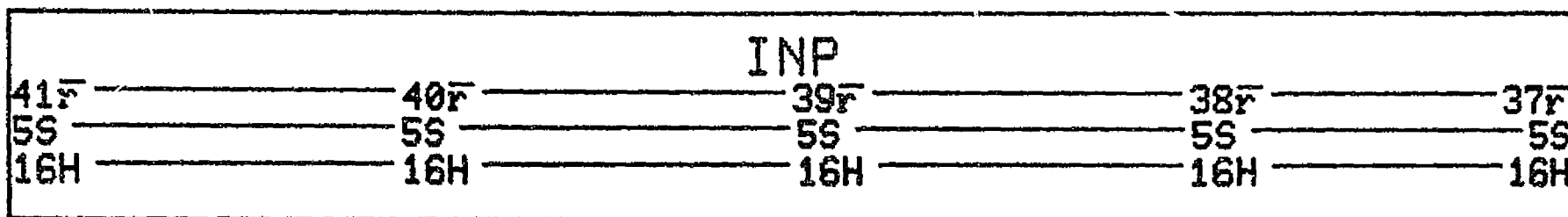
TIME IN HOURS OF DAY

DAY 142 1977

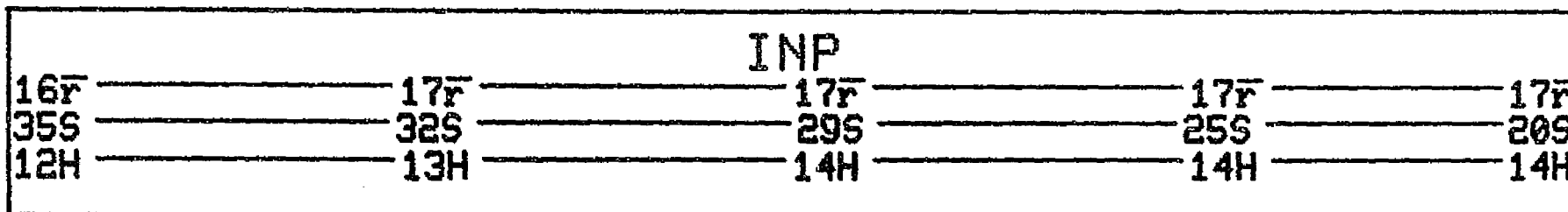


DAY 143 1977

MOON

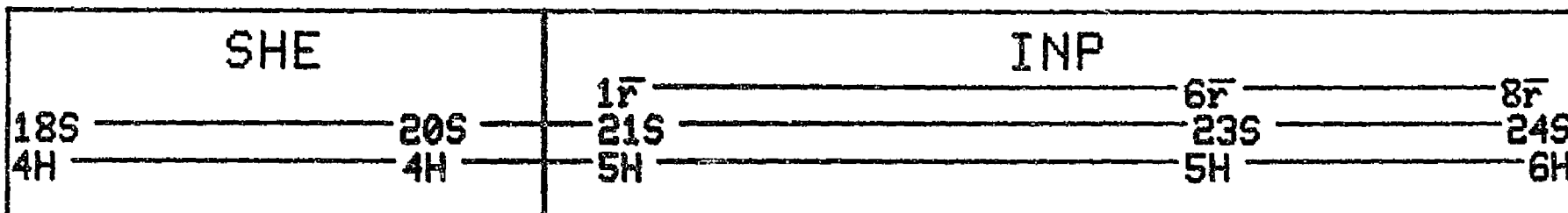


IMP-J

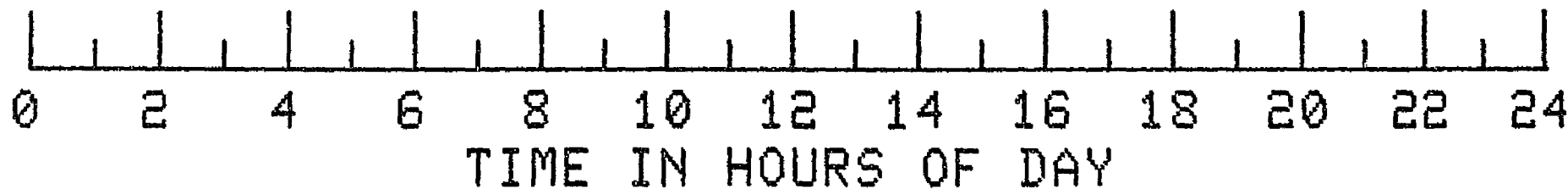
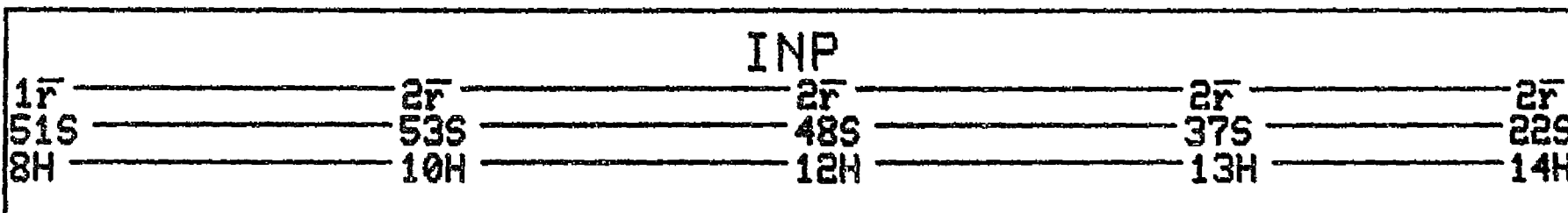


S

IMP-H

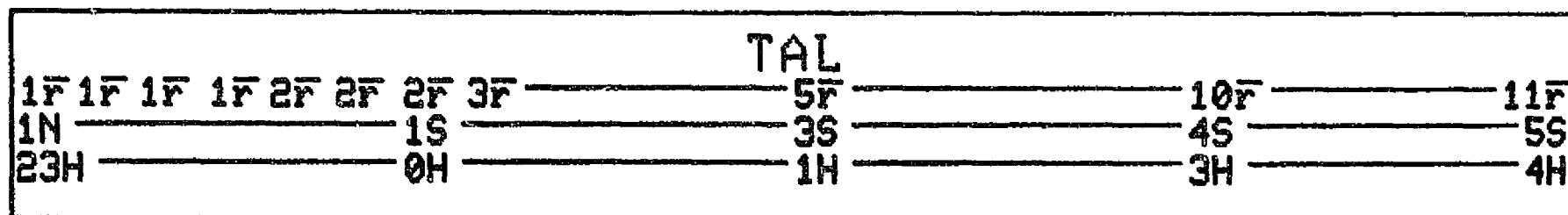


VELA
-5B

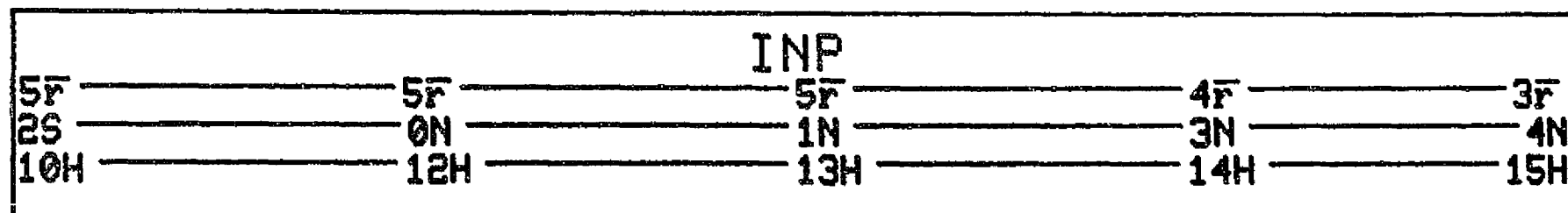


DAY 143 1977

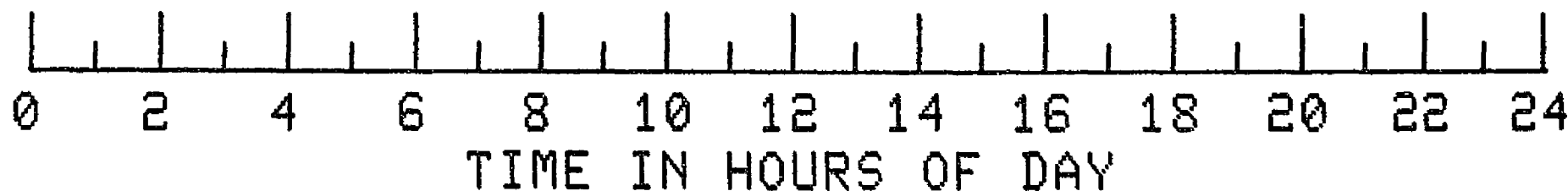
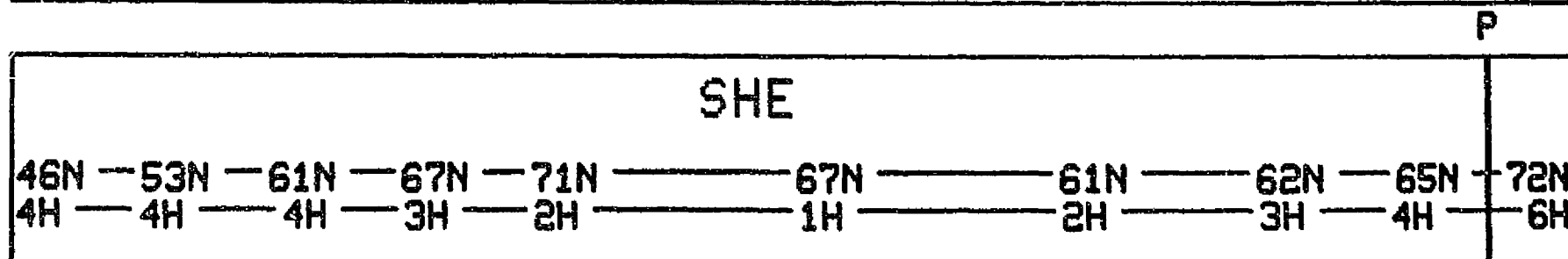
SOL
RAD
-11A



SOL
RAD
-11B

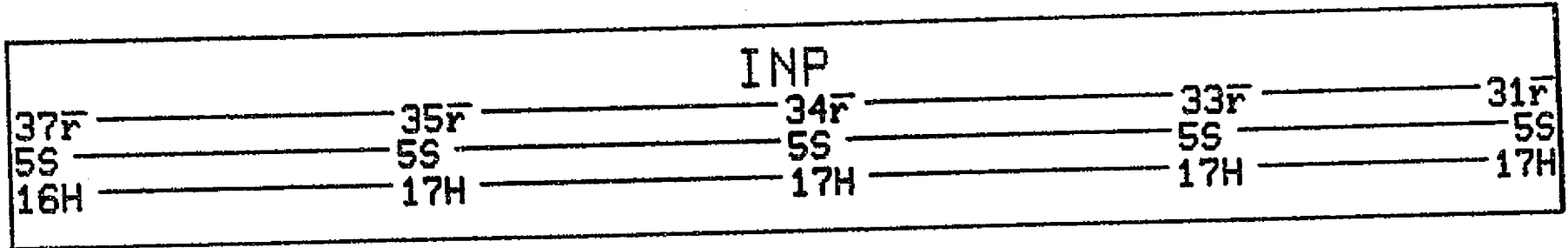


HAUK
EYE-1

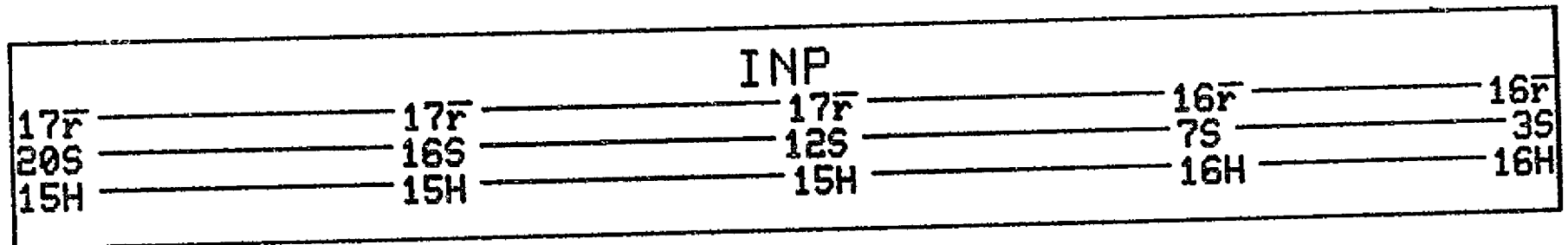


DAY 144 1977

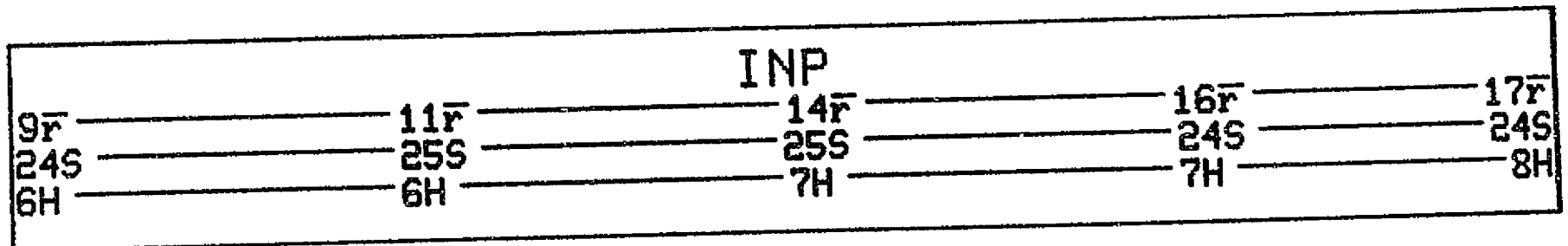
MOON



IMP-J

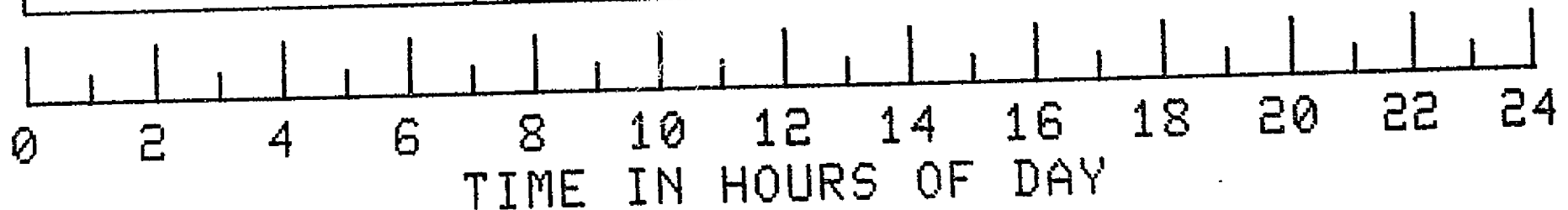
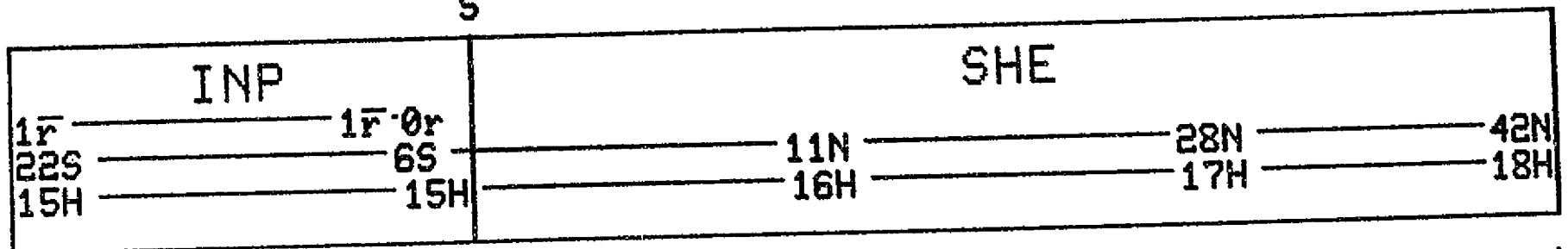


IMP-H

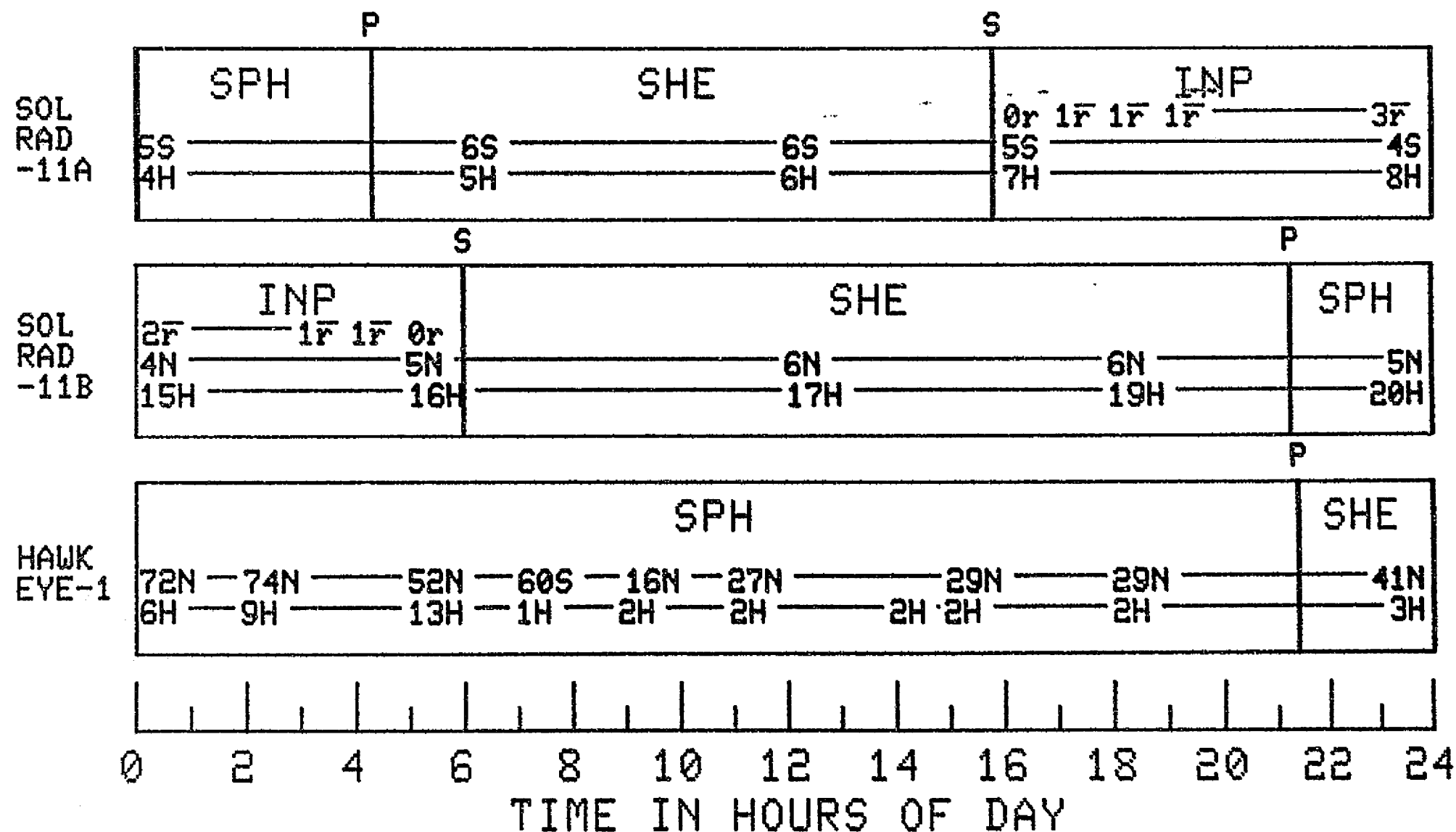


S

VELA
-5B

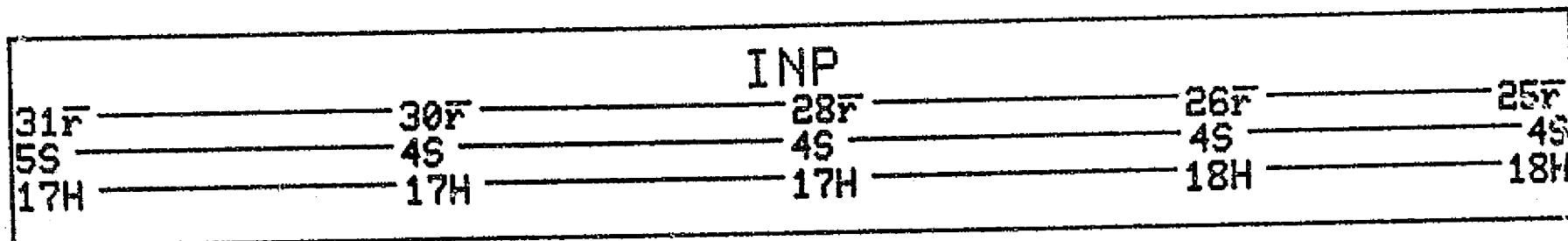


DAY 144 1977

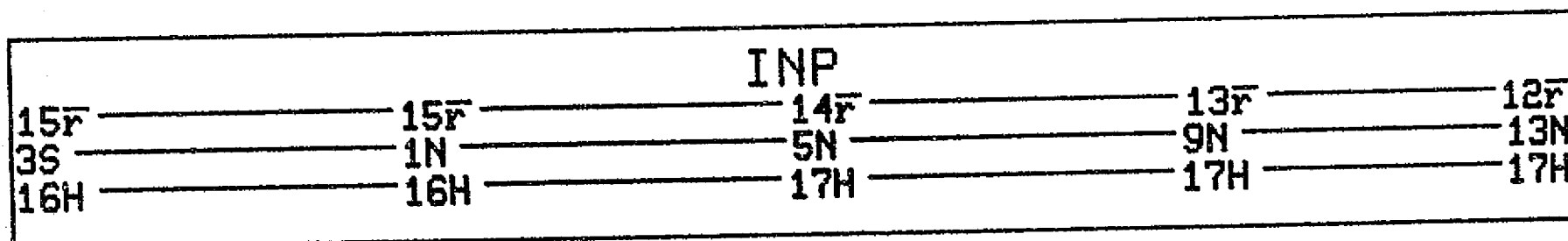


DAY 145 1977

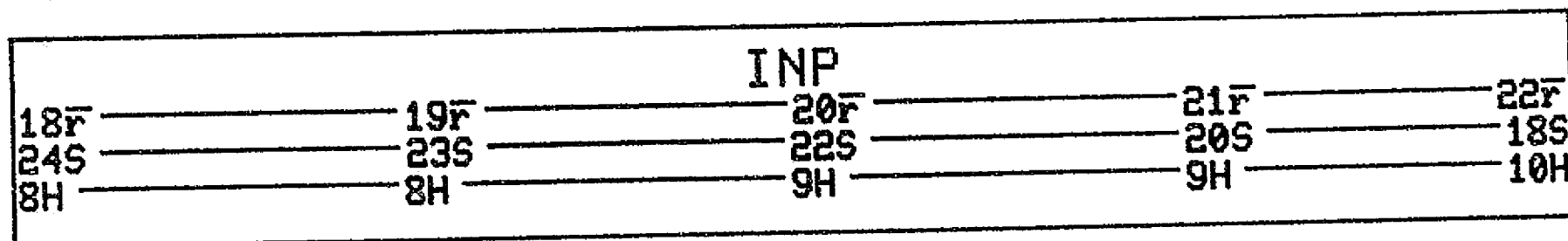
MOON



IMP-J

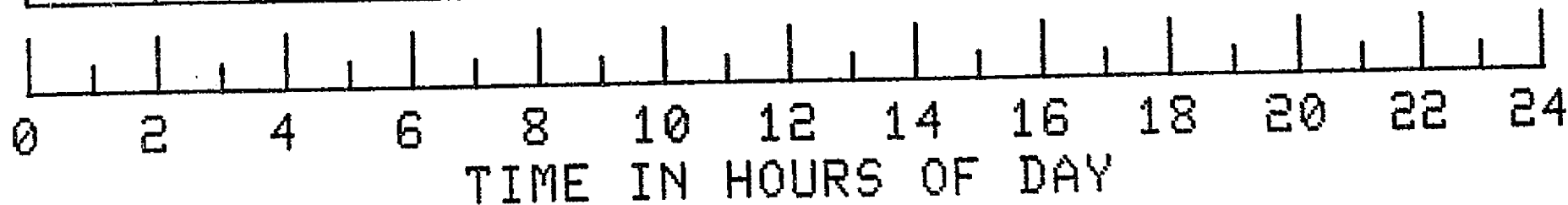
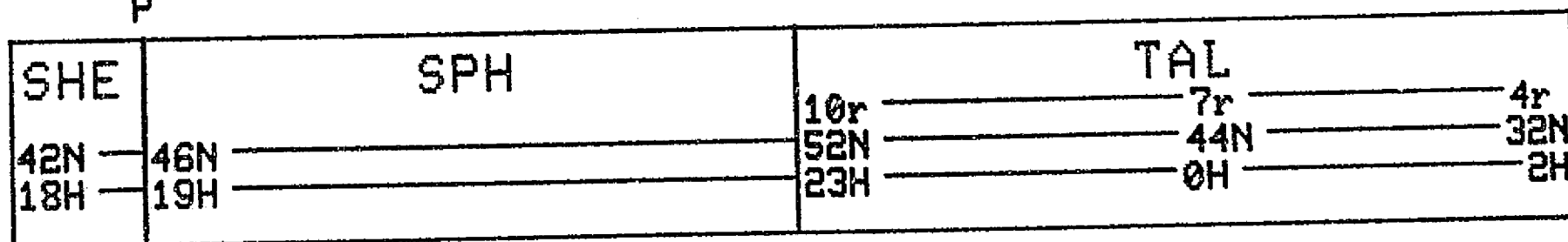


IMP-H



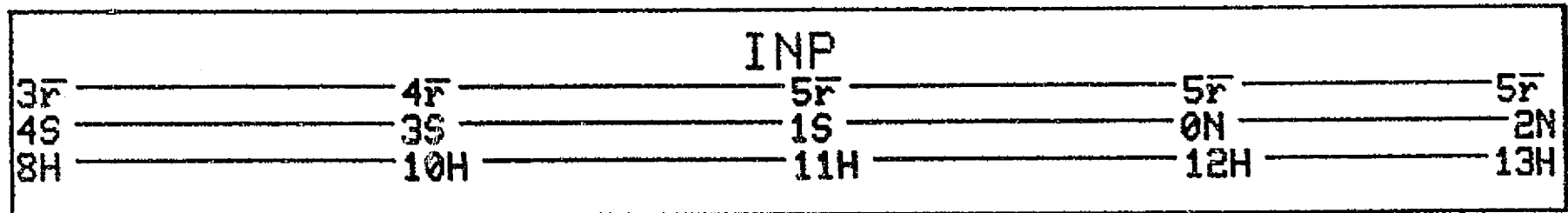
P

VELA
-5B

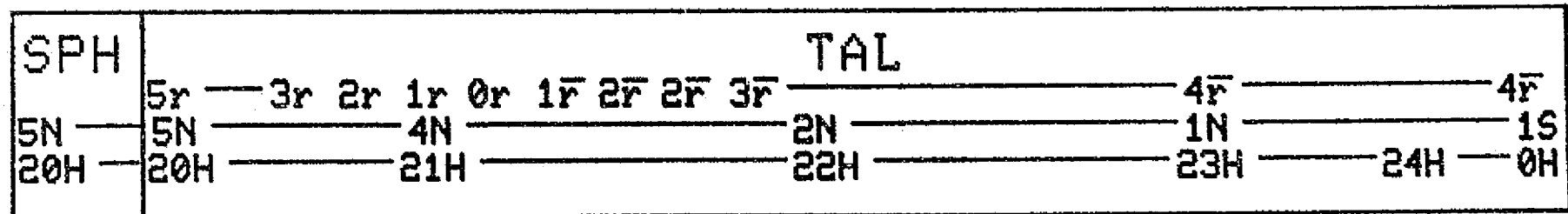


DAY 145 1977

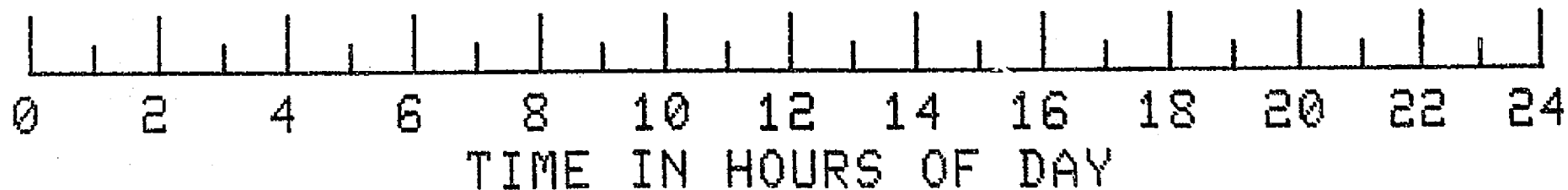
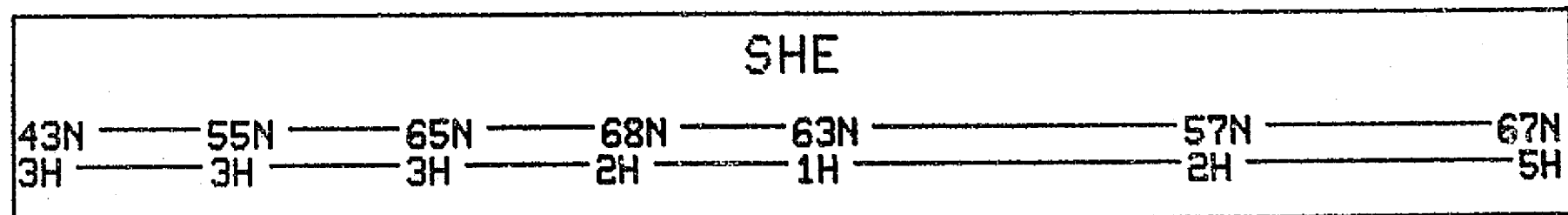
SOL
RAD
-11A



SOL
RAD
-11B

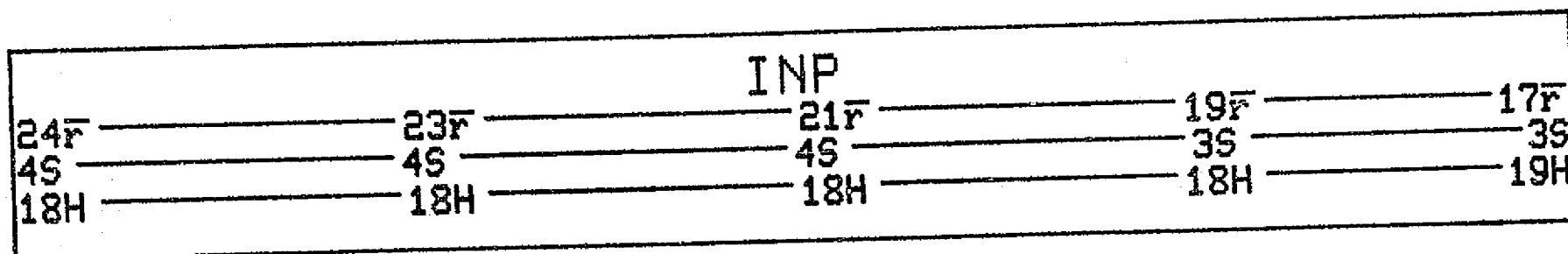


HAWK
EYE-1

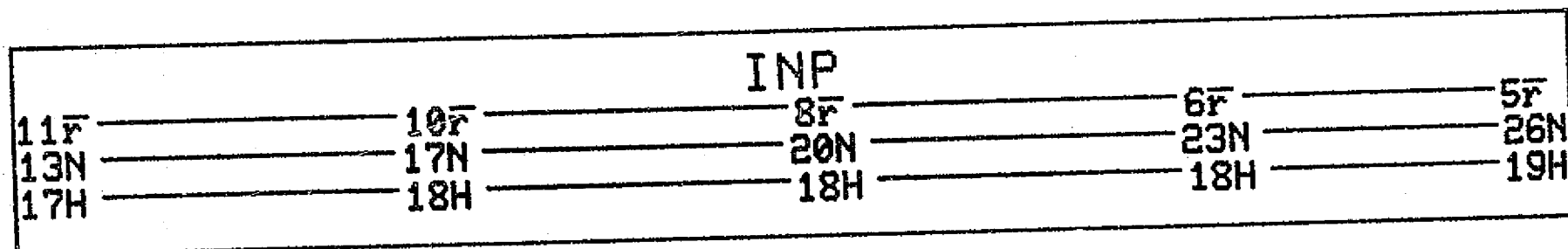


DAY 146 1977

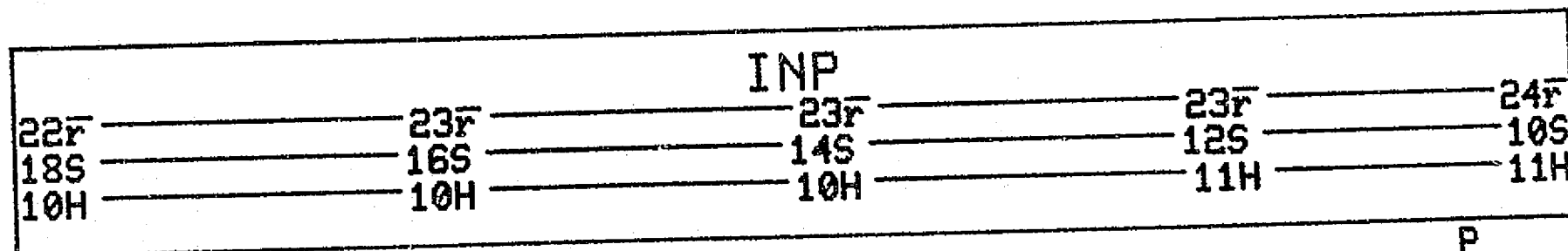
MOON



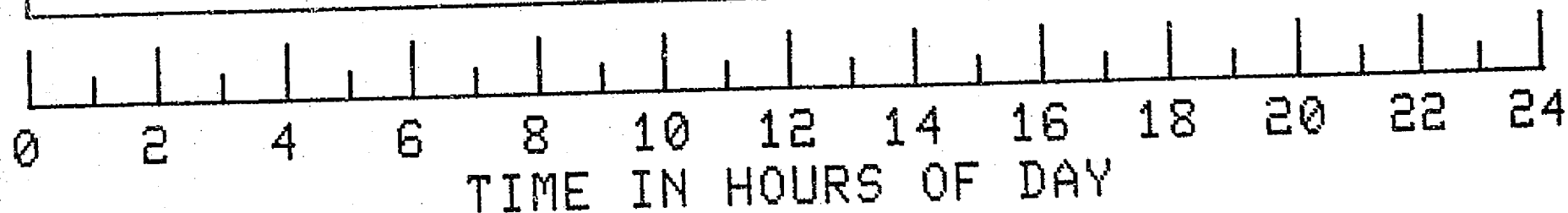
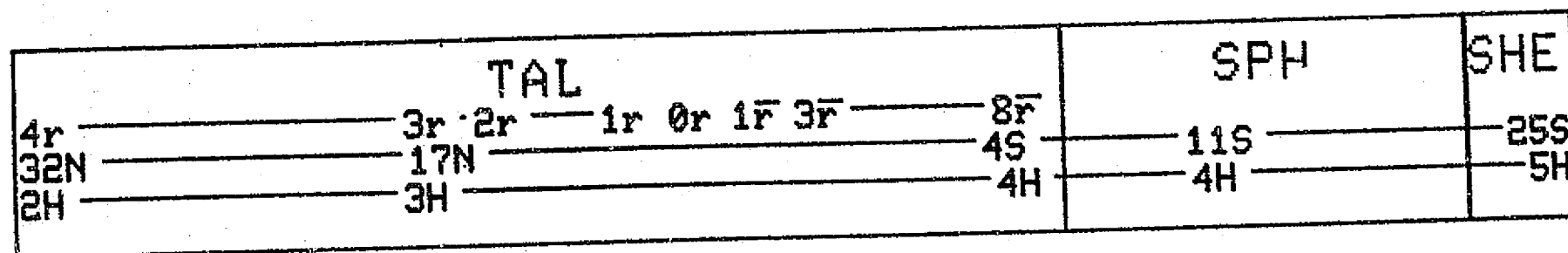
IMP-J



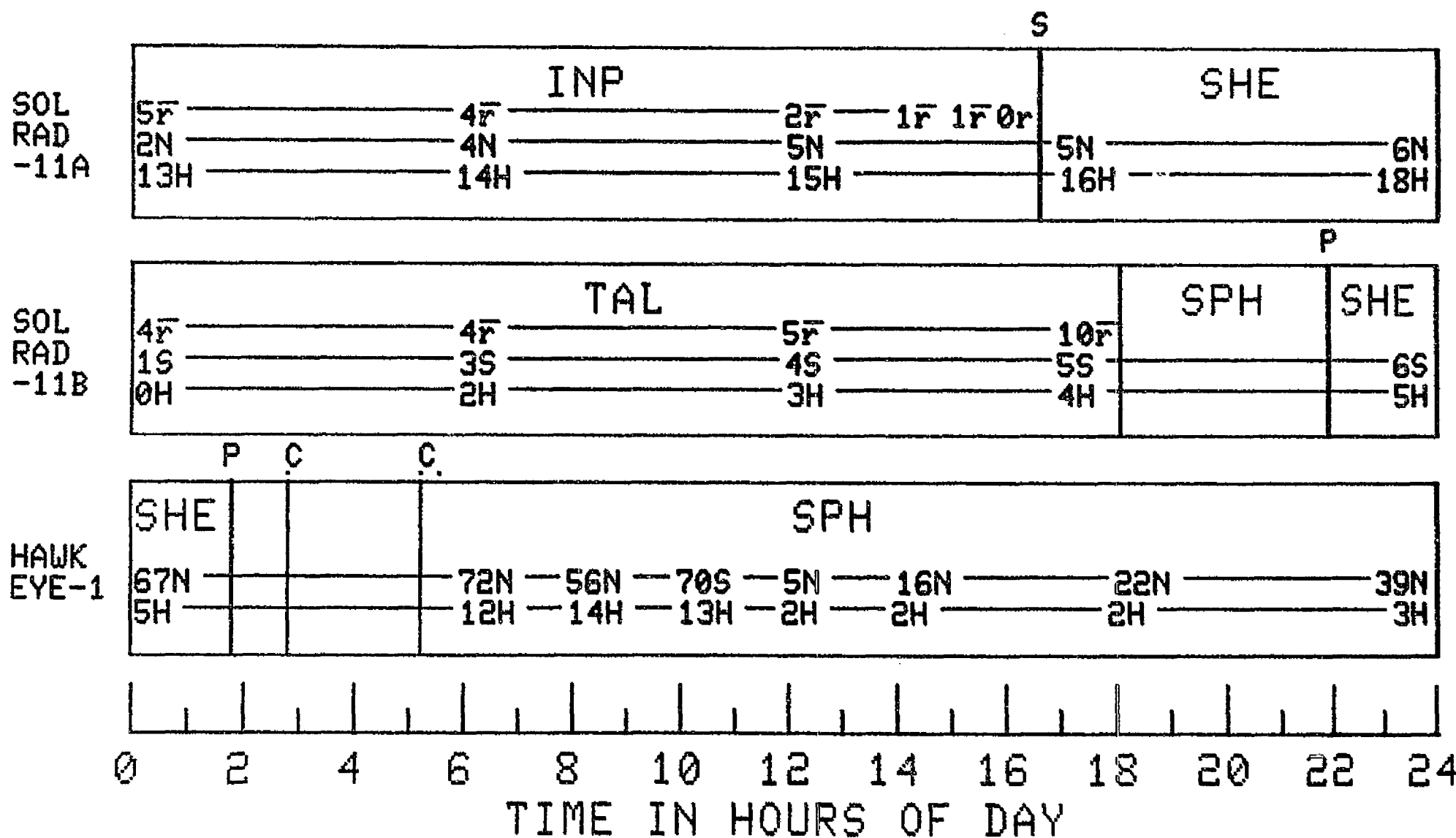
IMP-H



VELA
-5B

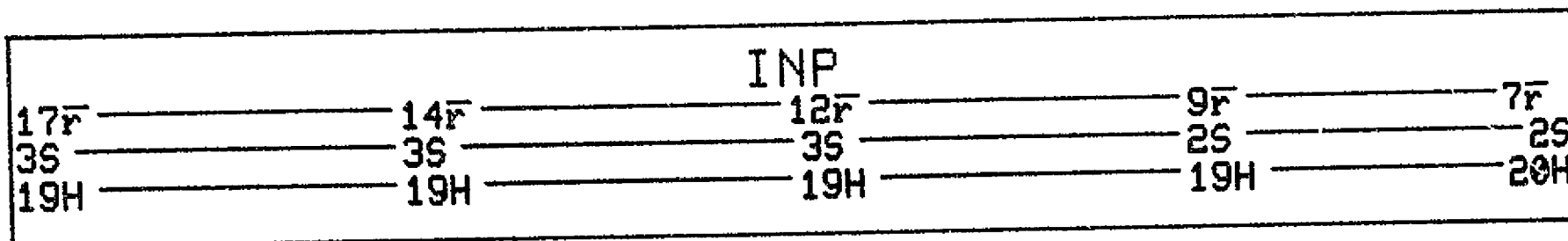


DAY 146 1977



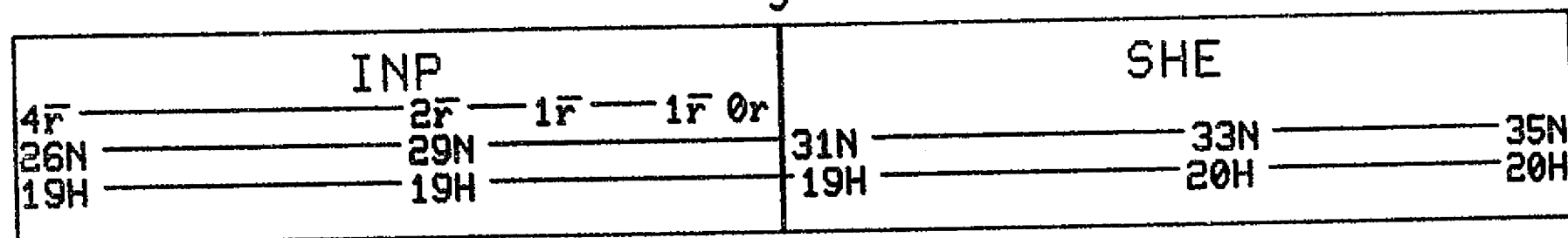
DAY 147 1977

MOON

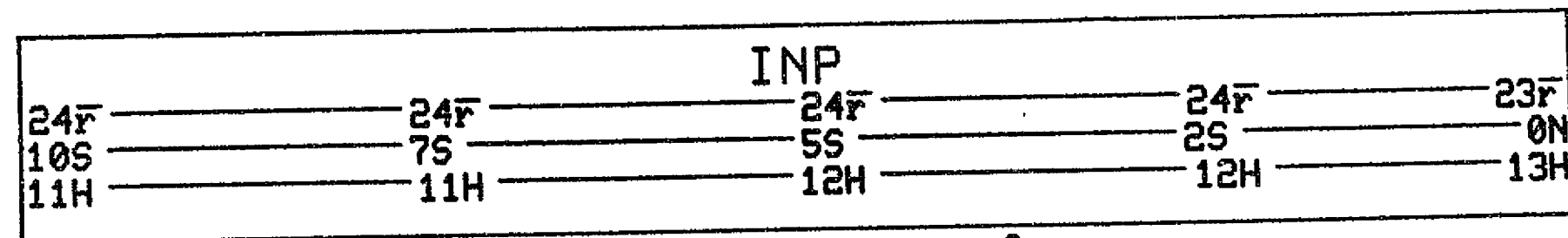


S

IMP-J

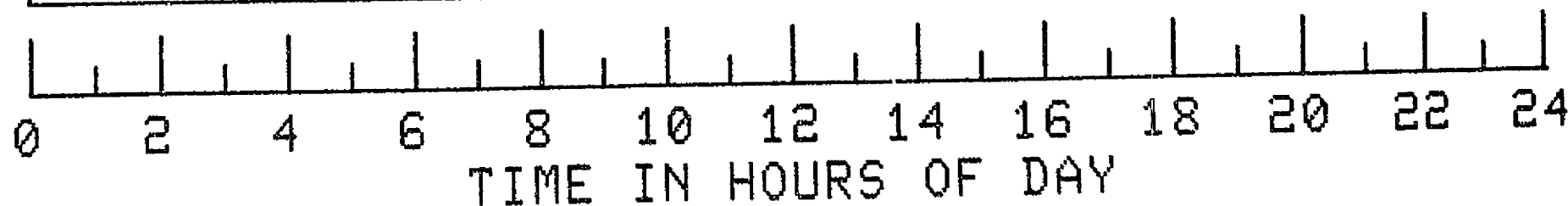
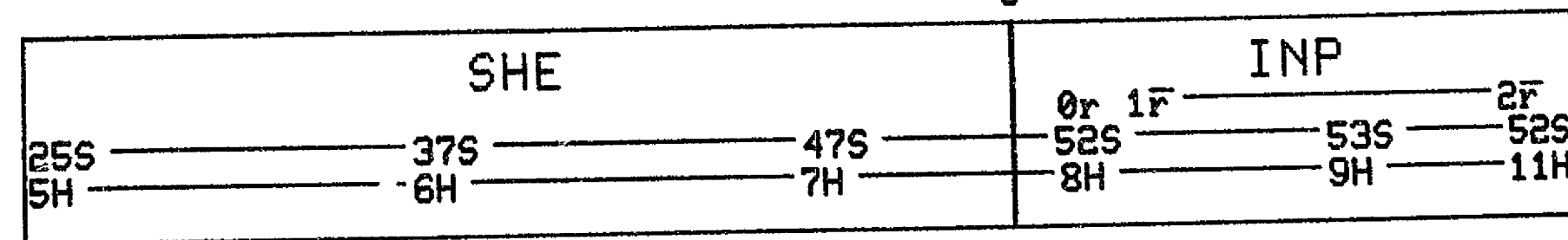


IMP-H

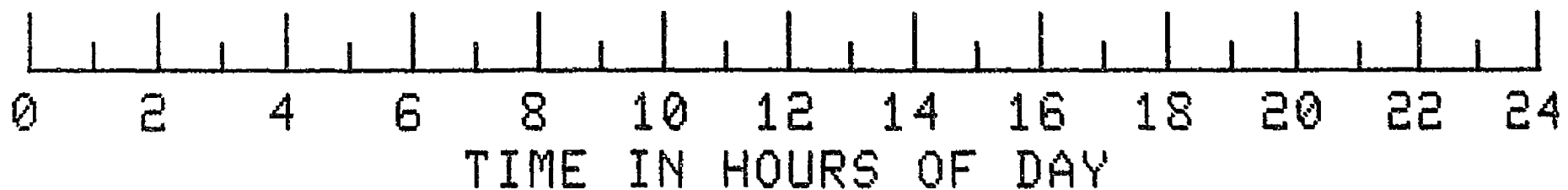
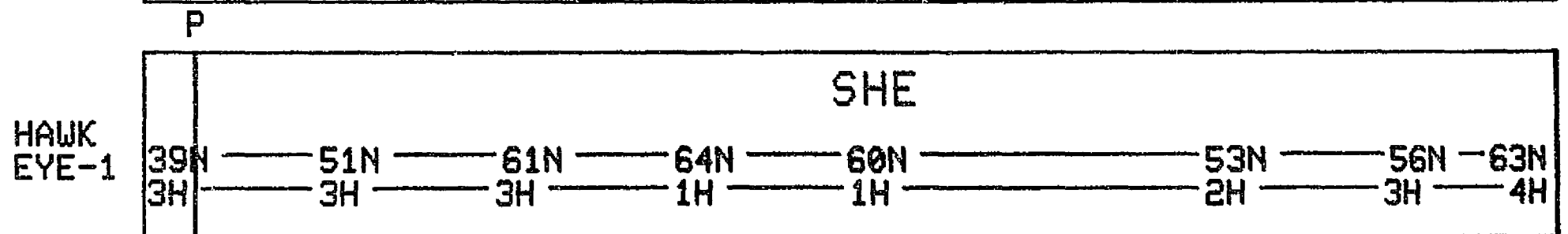
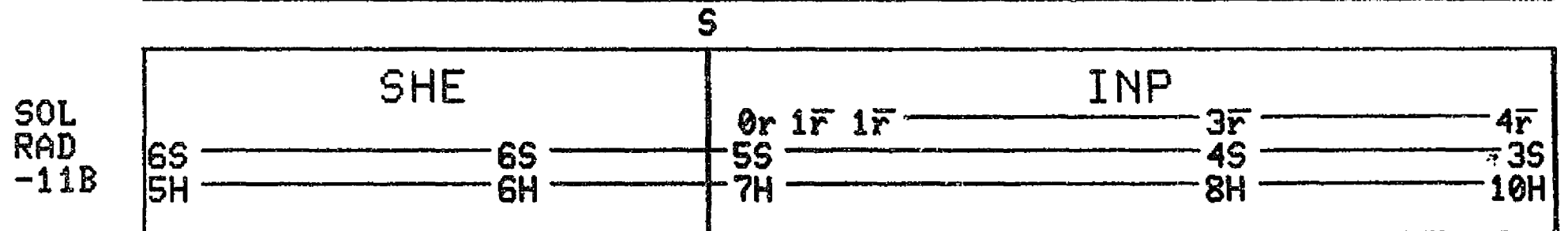
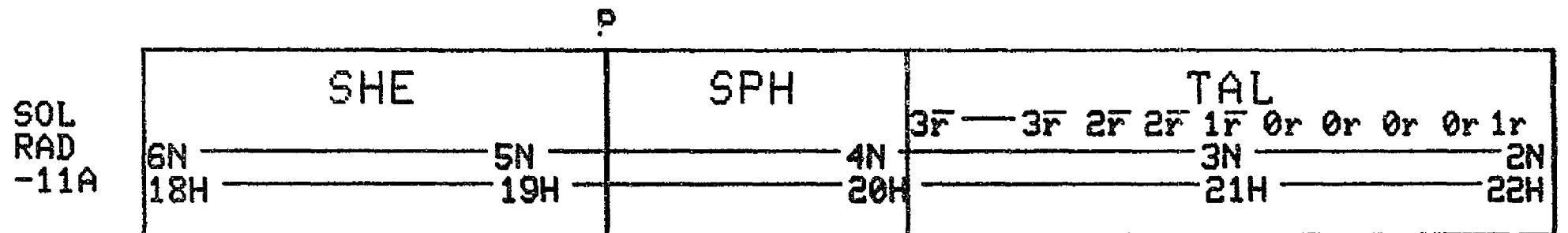


S

VELA
-5B



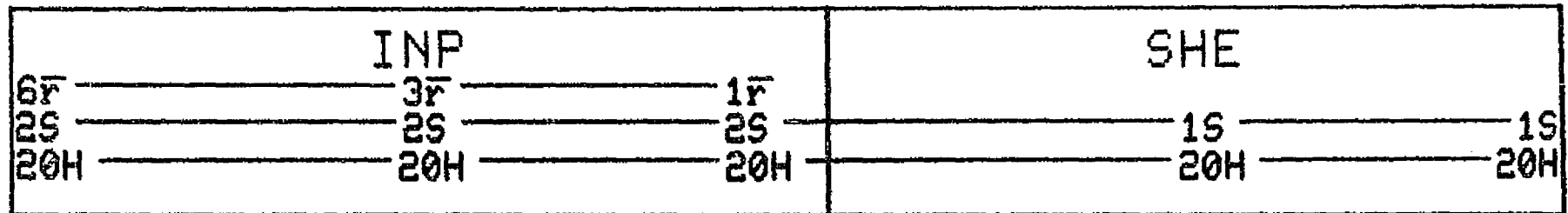
DAY 147 1977



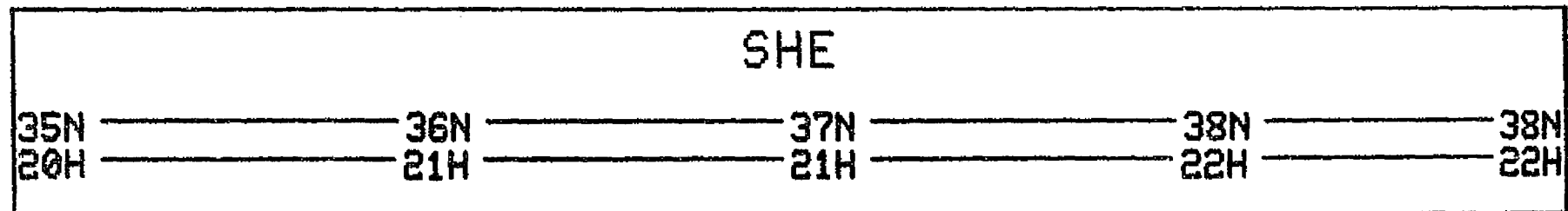
DAY 148 1977

S

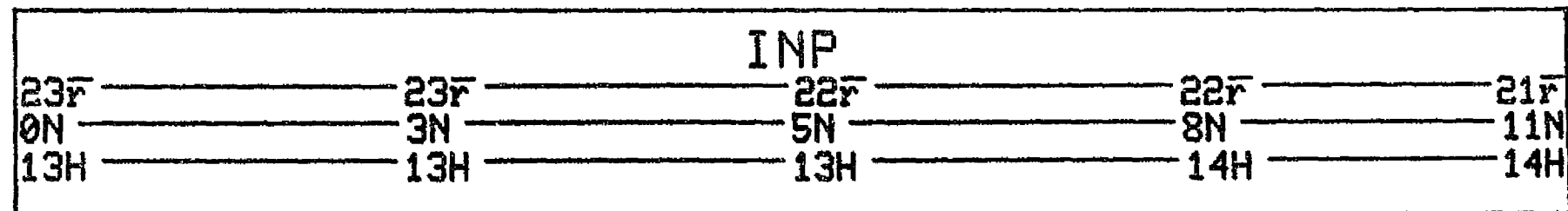
MOON



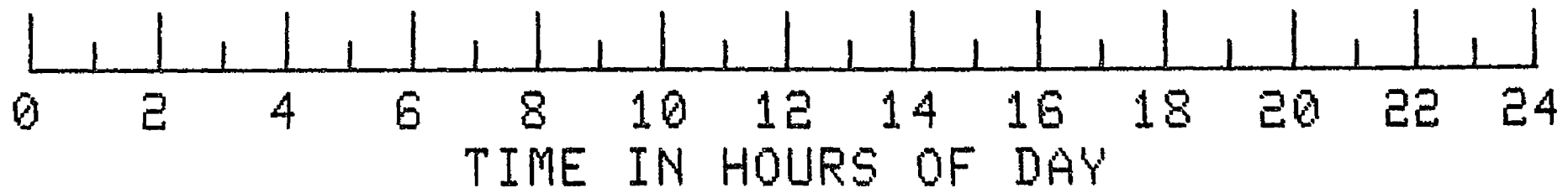
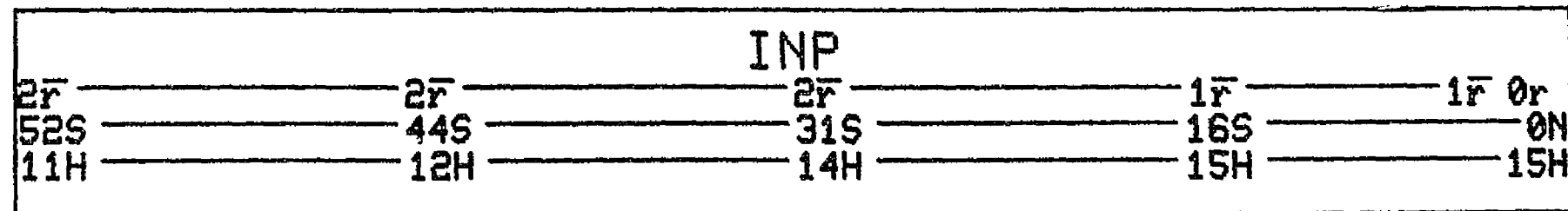
IMP-J



IMP-H

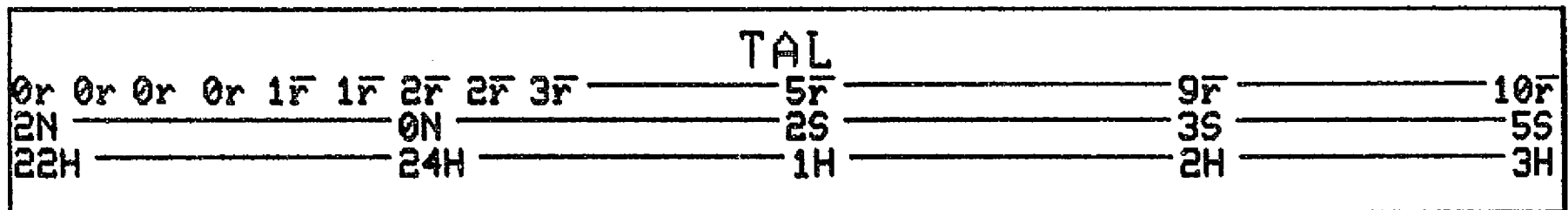


VELA
-5B

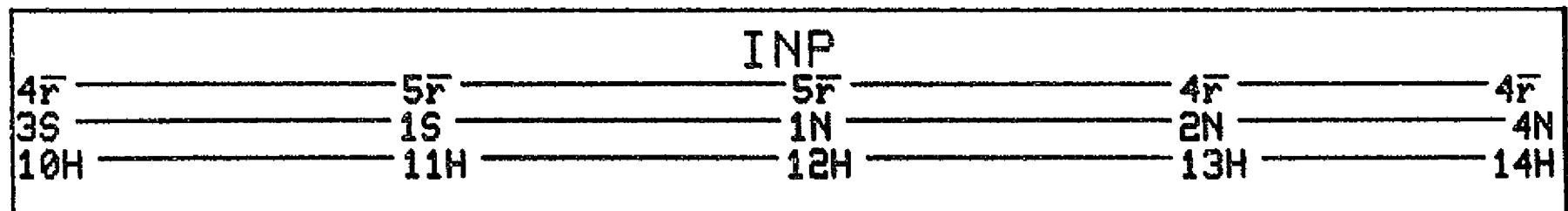


DAY 148 1977

SOL
RAD
-11A



SOL
RAD
-11B

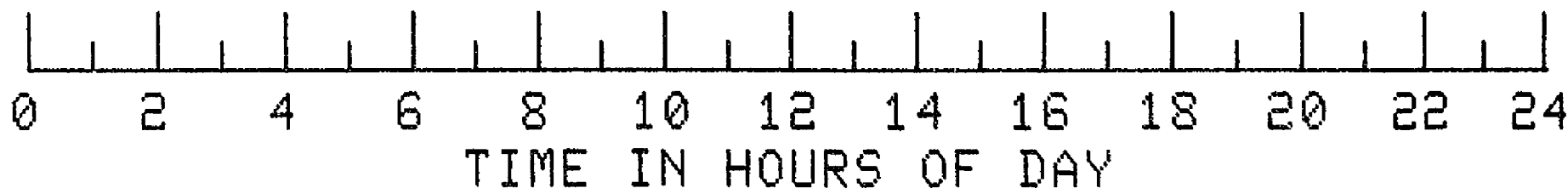
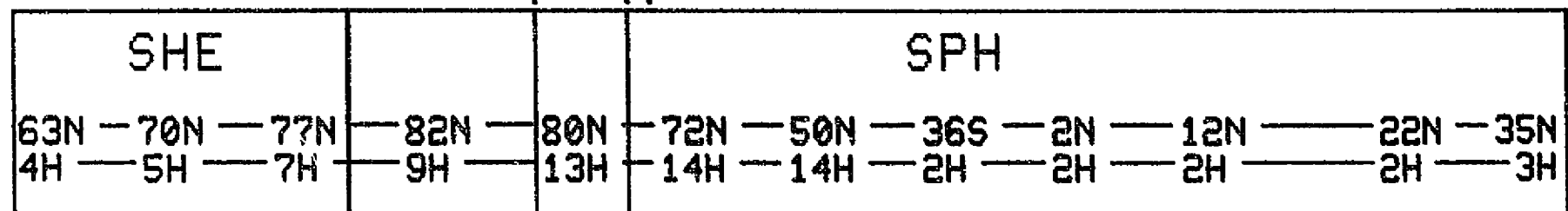


P

C

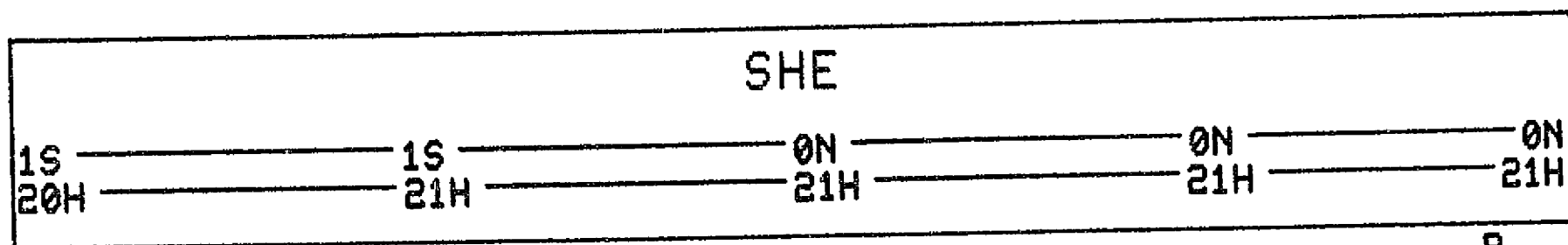
C

HAWK
EYE-1

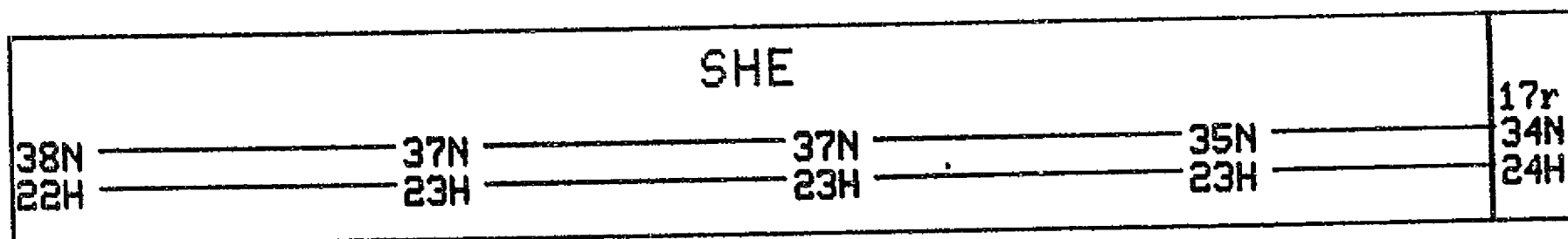


DAY 149 1977

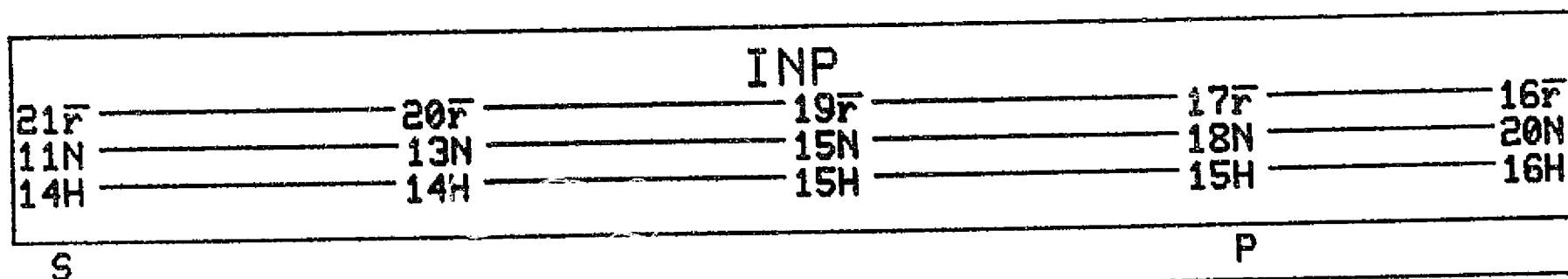
MOON



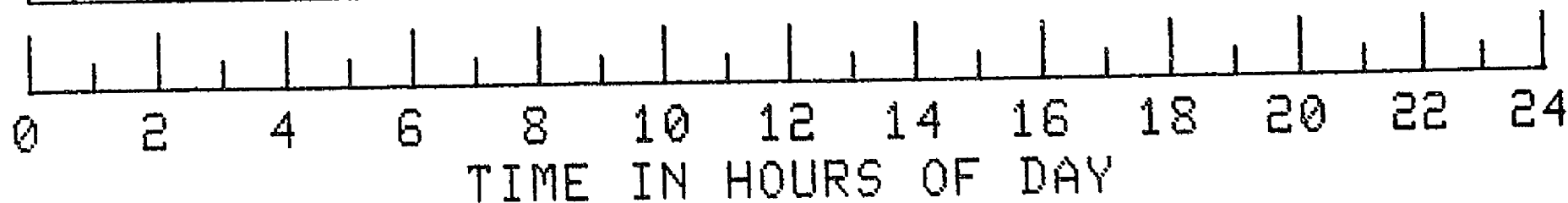
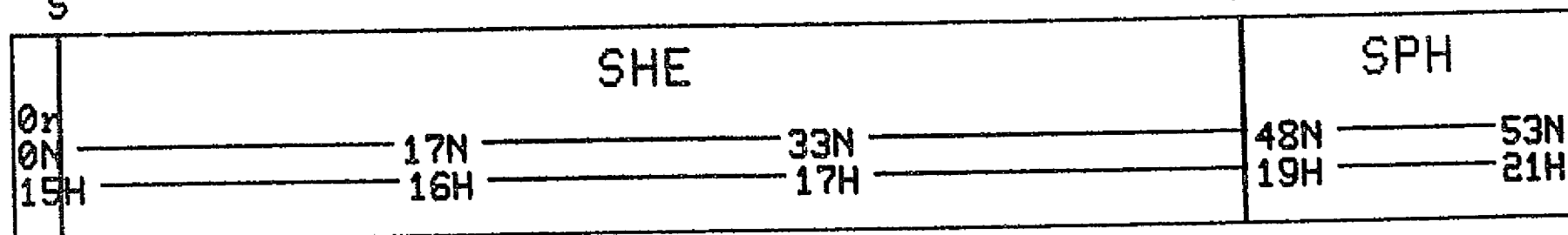
IMP-J



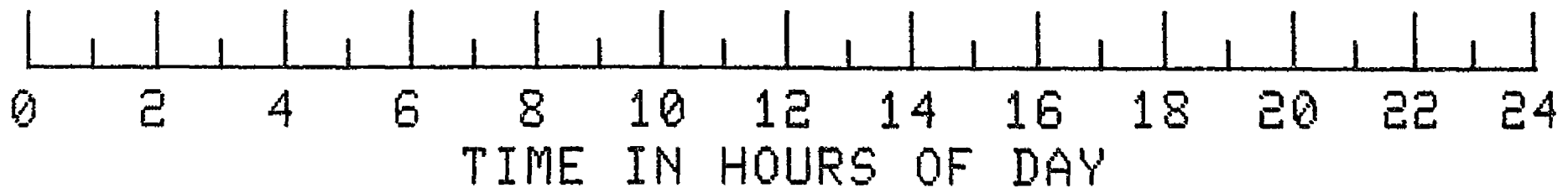
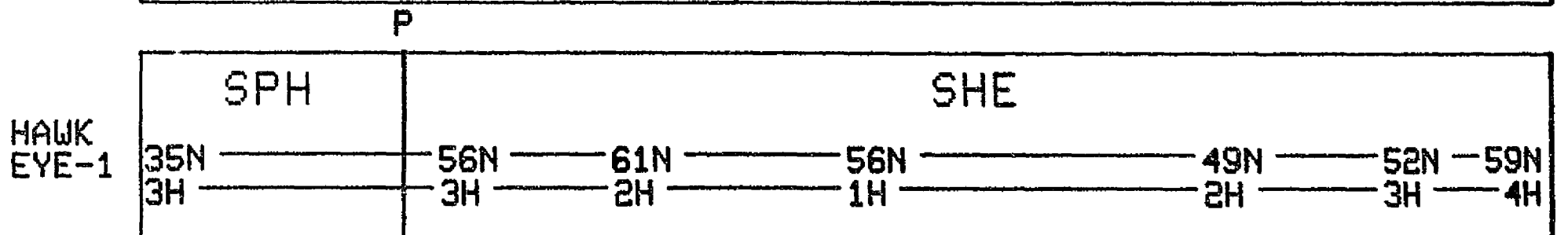
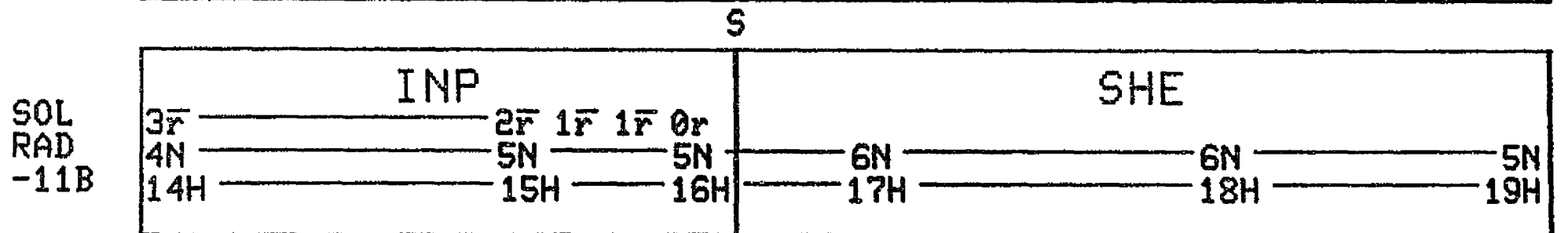
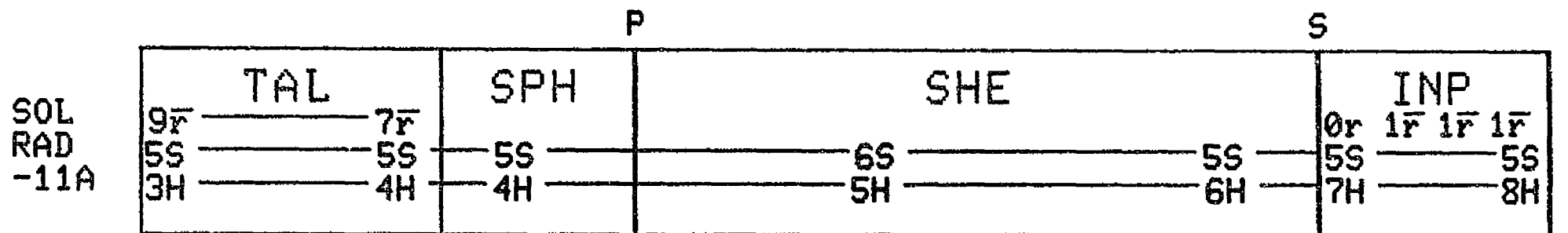
IMP-H



VELA
-5B

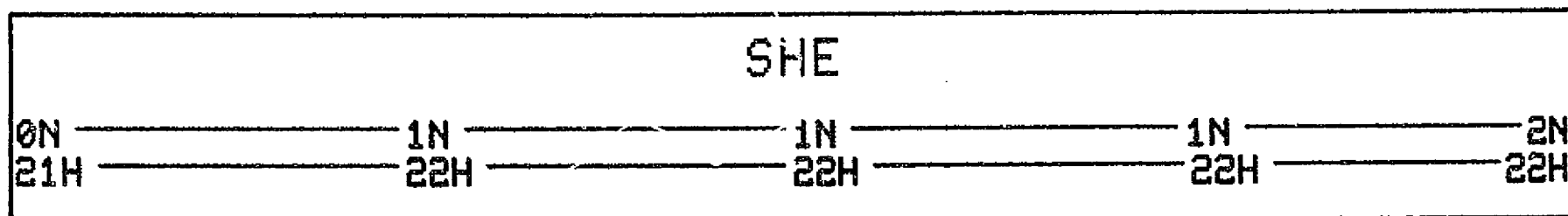


DAY 149 1977

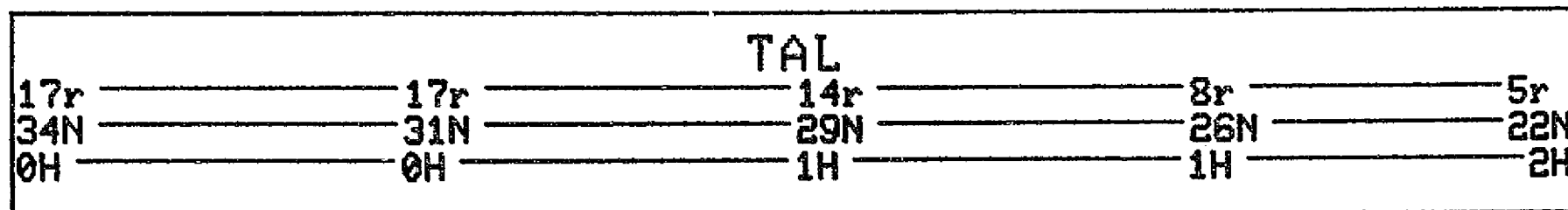


DAY 150 1977

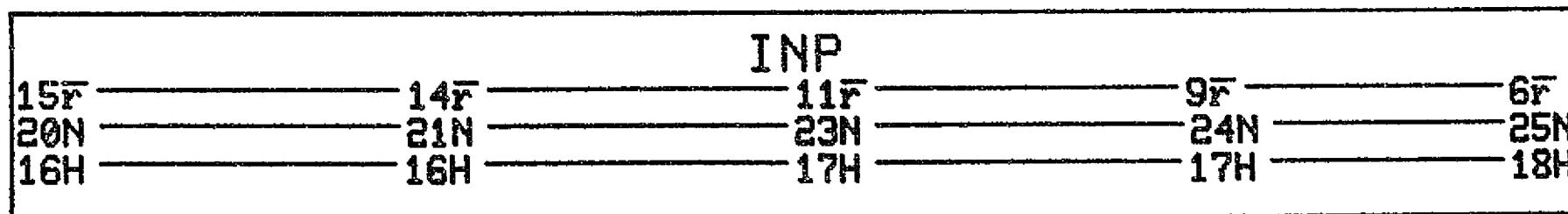
MOON



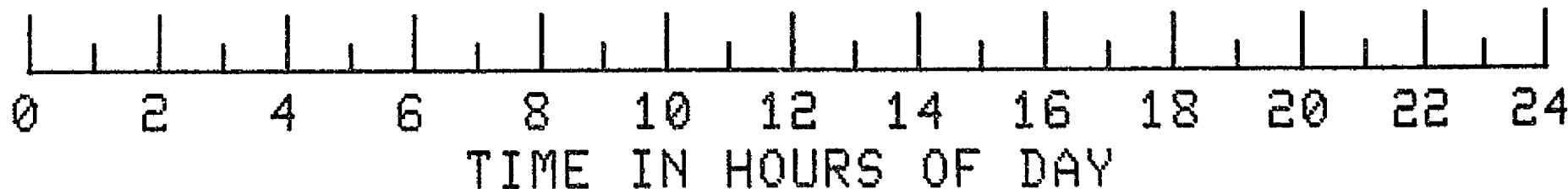
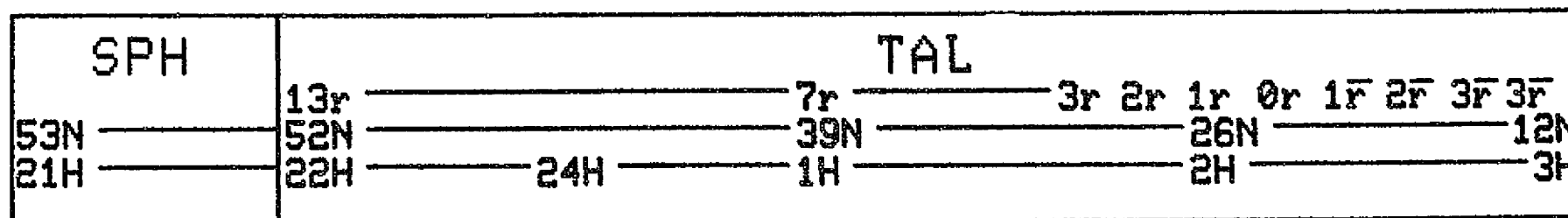
IMP-J



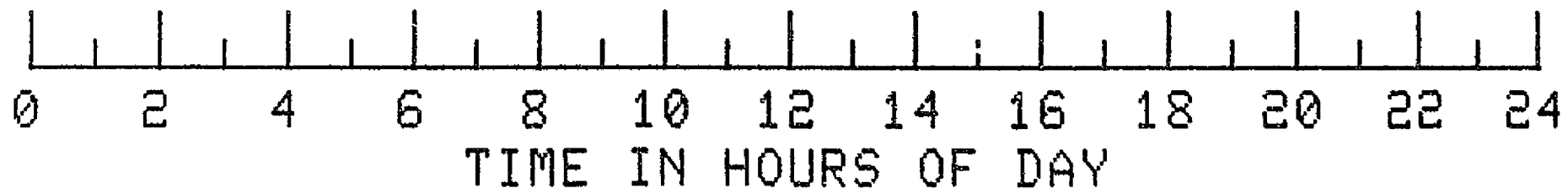
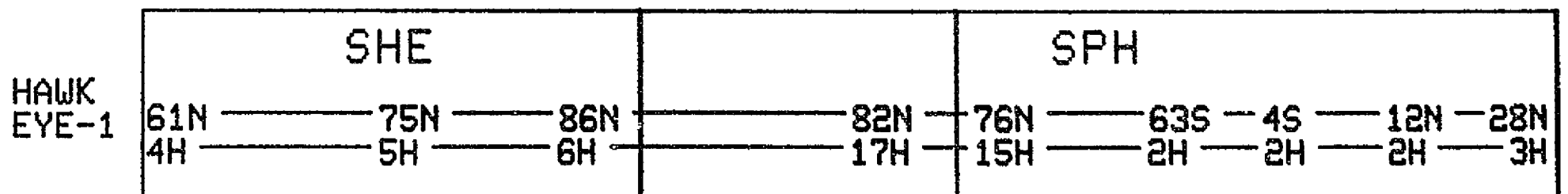
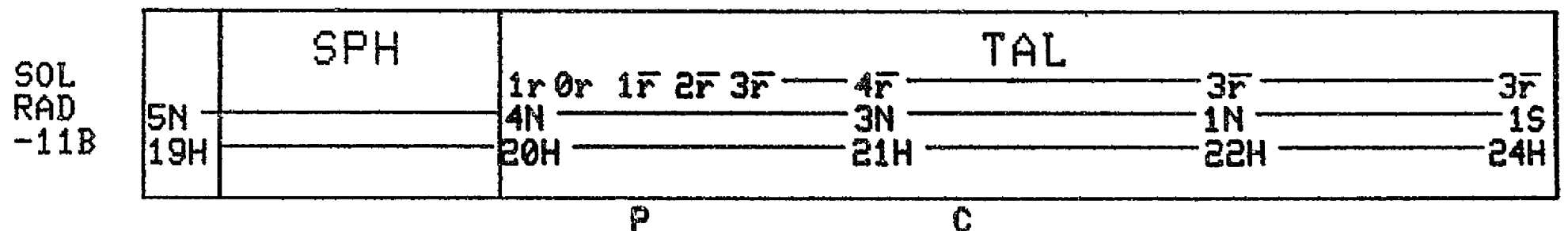
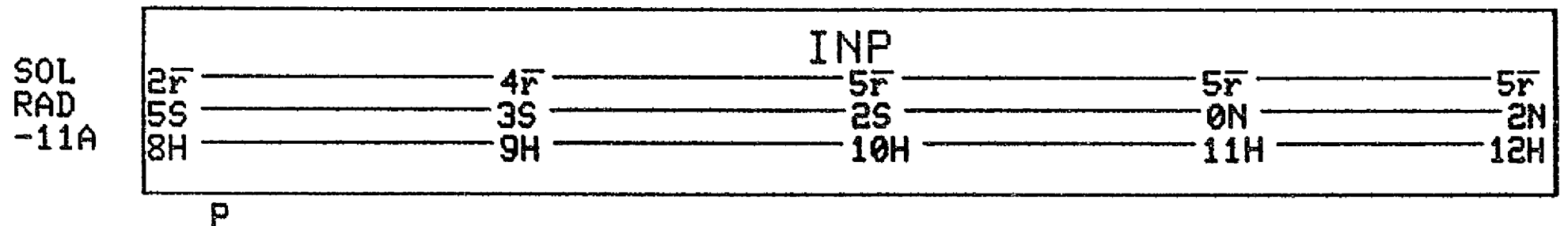
IMP-H



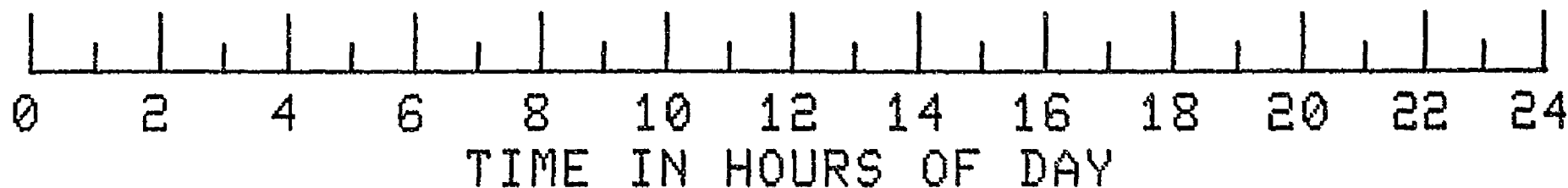
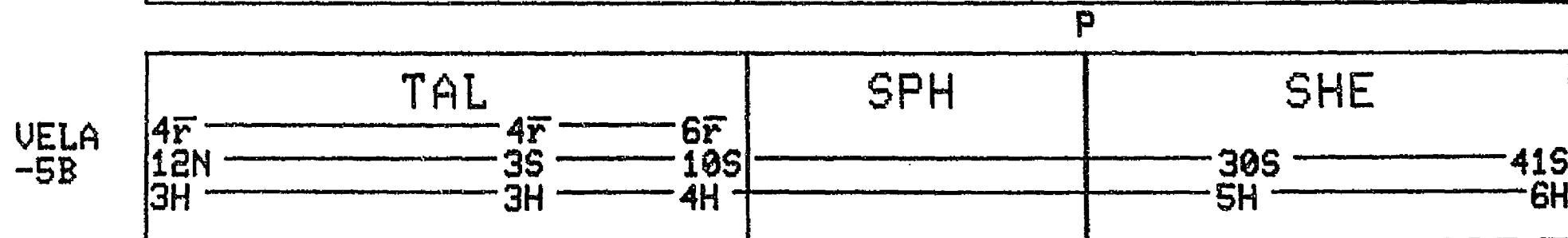
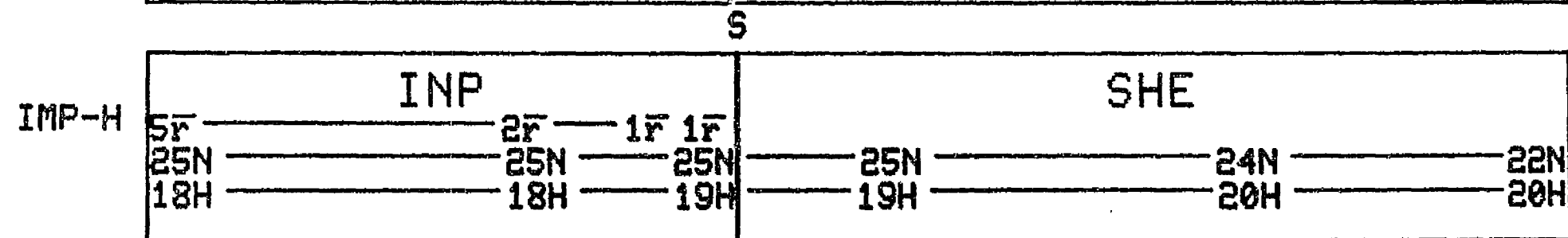
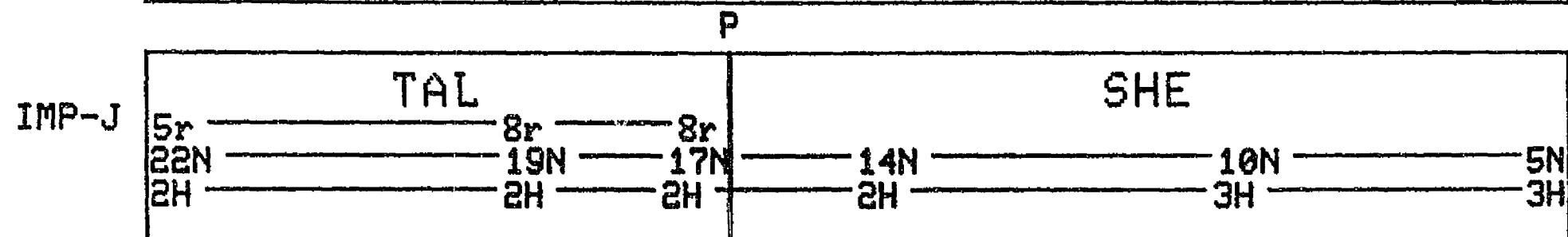
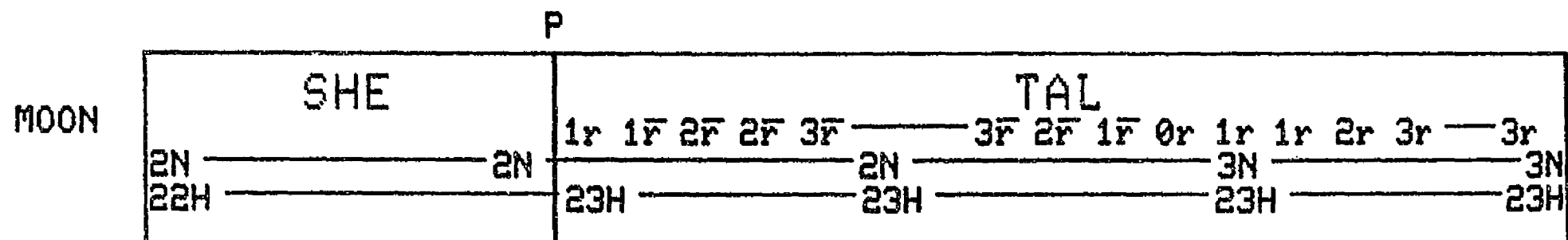
VELA
-5B



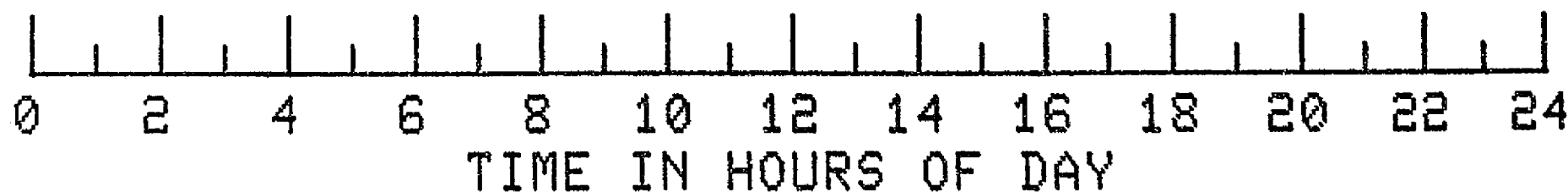
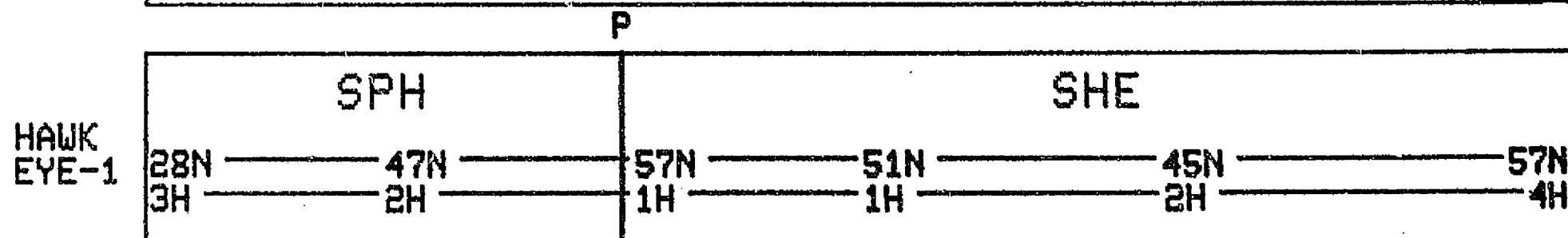
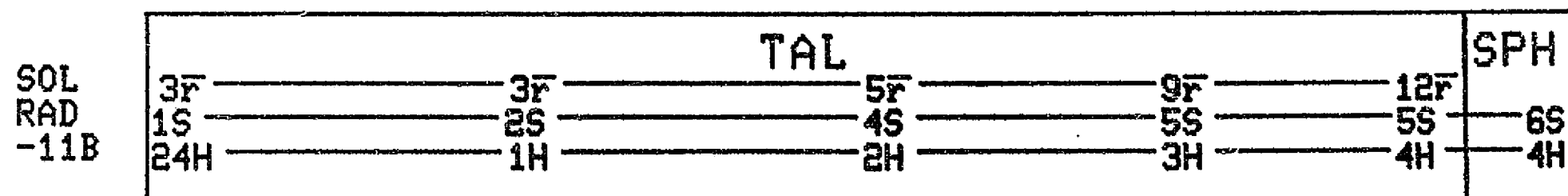
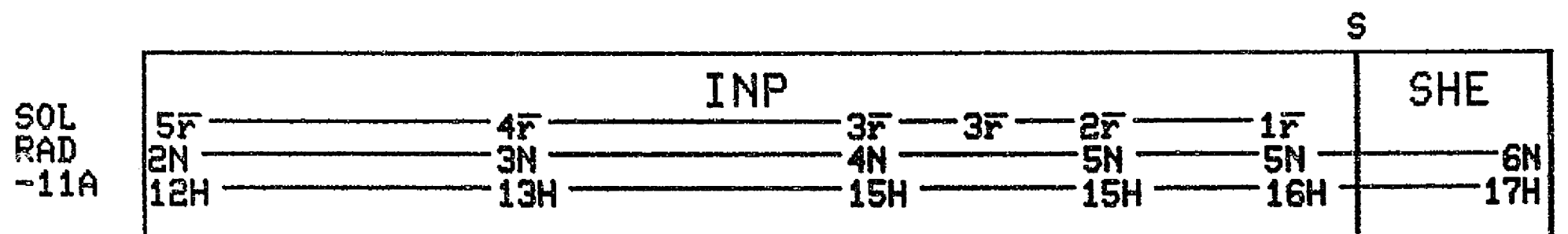
DAY 150 1977



DAY 151 1977

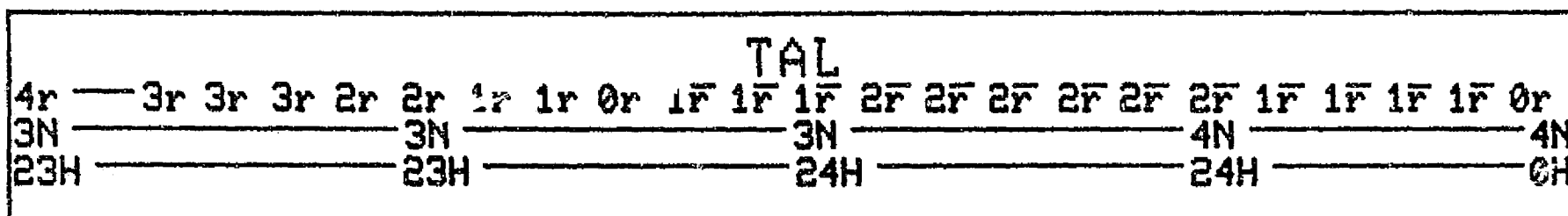


DAY 151 1977

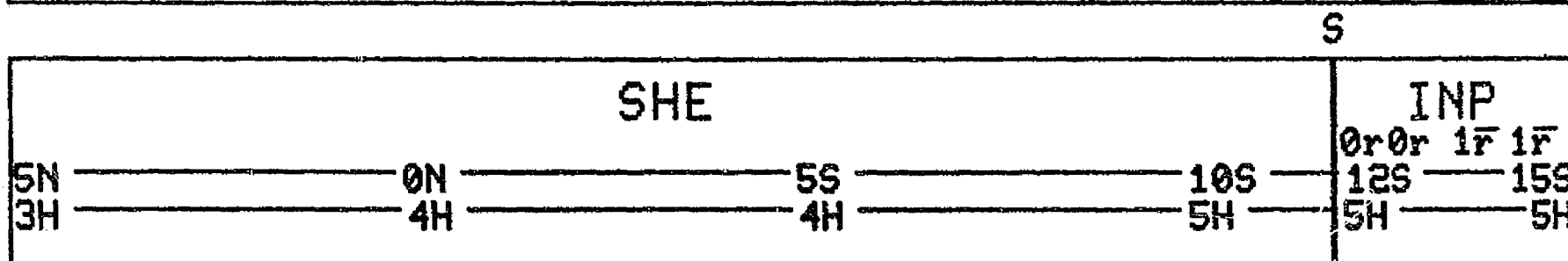


DAY 152 1977

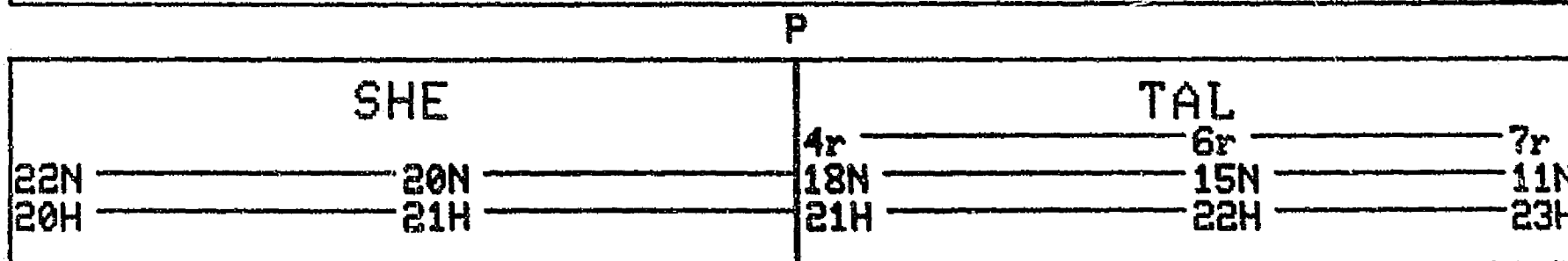
MOON



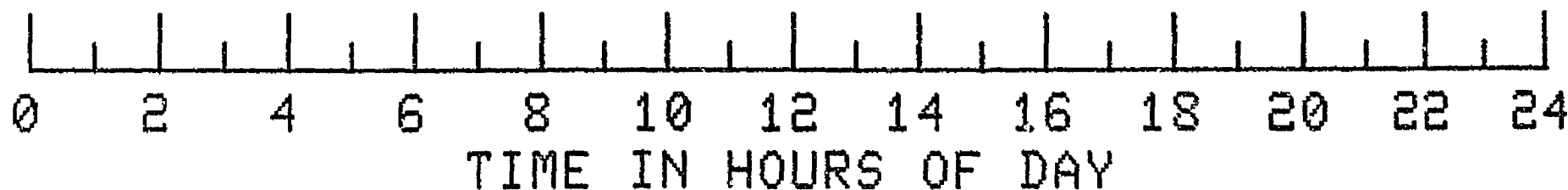
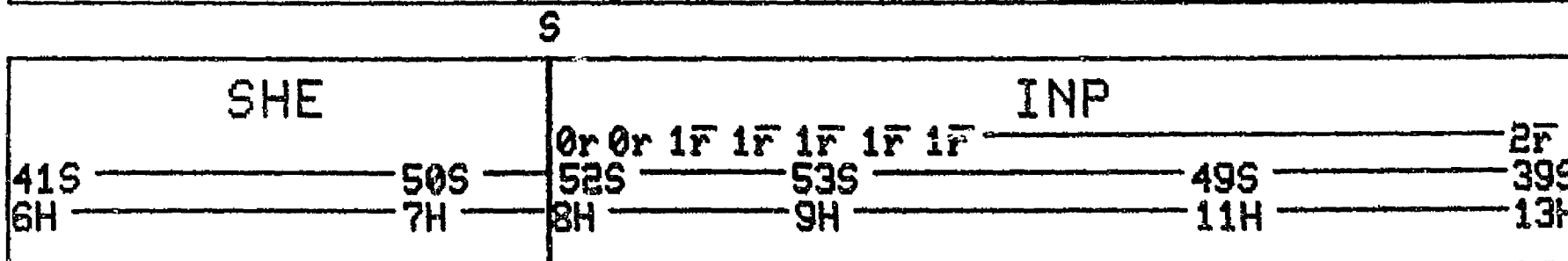
IMP-J



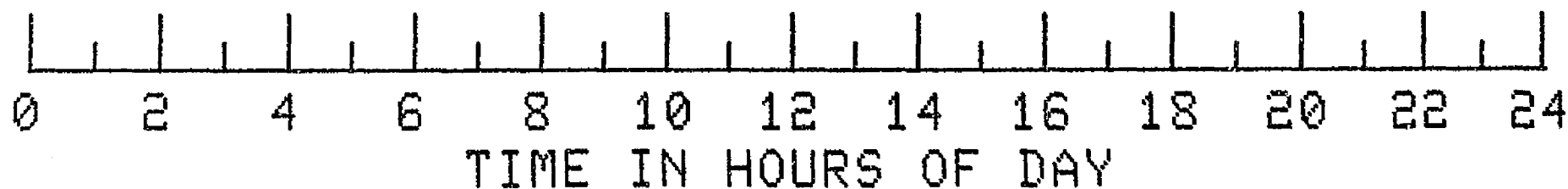
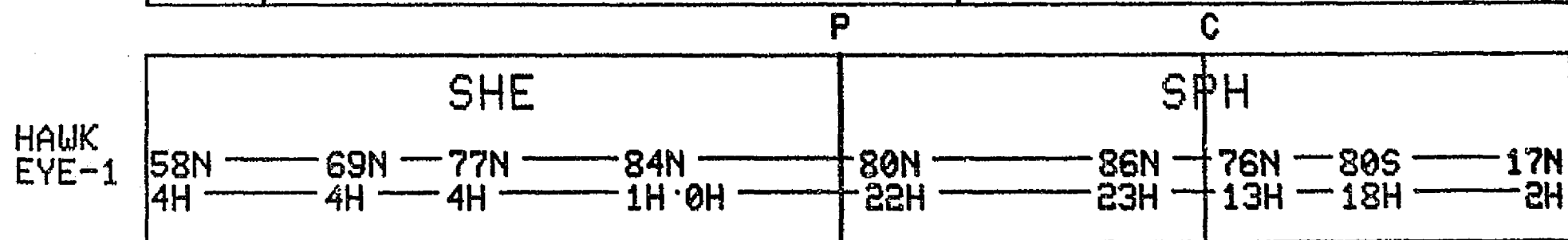
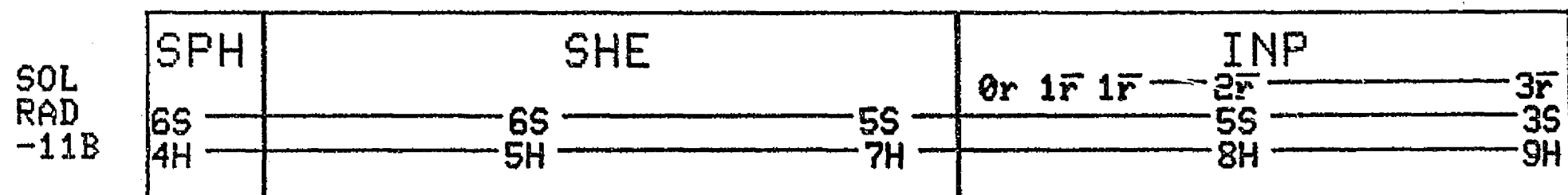
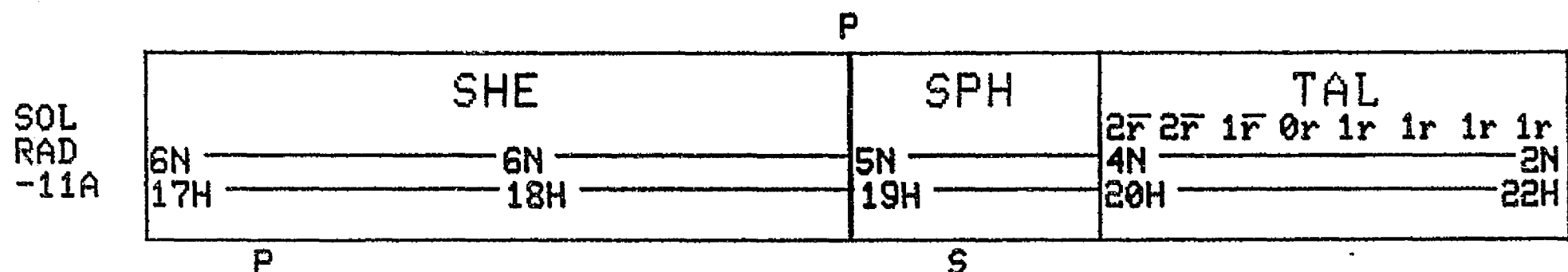
IMP-H



VELA
-5B

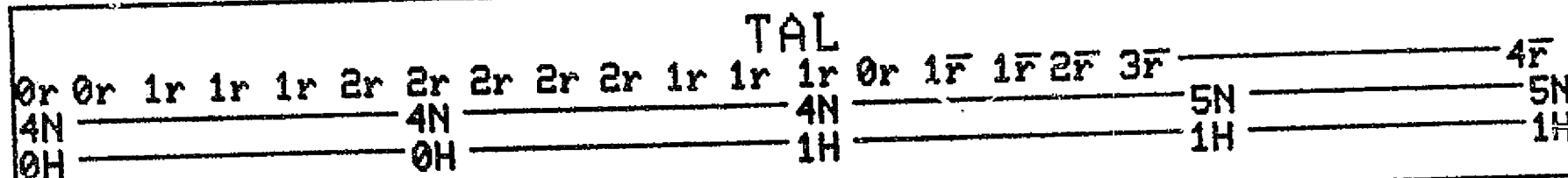


DAY 152 1977

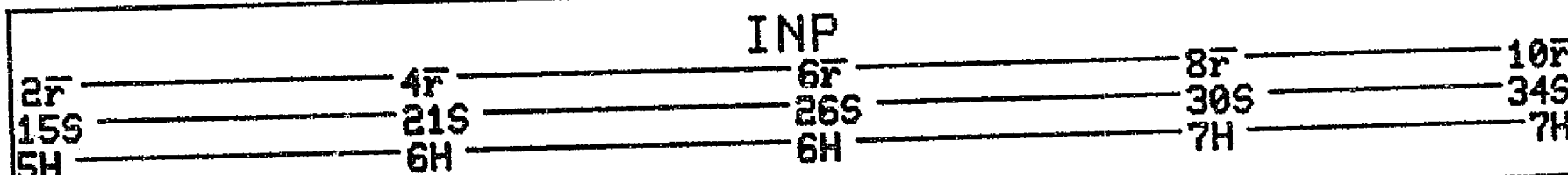


DAY 153 1977

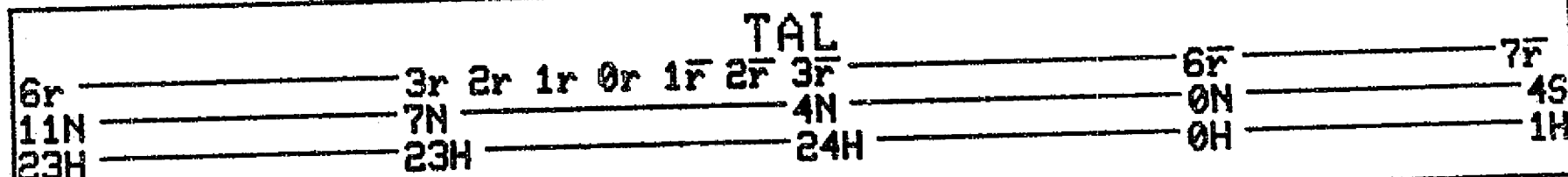
MOON



IMP-J

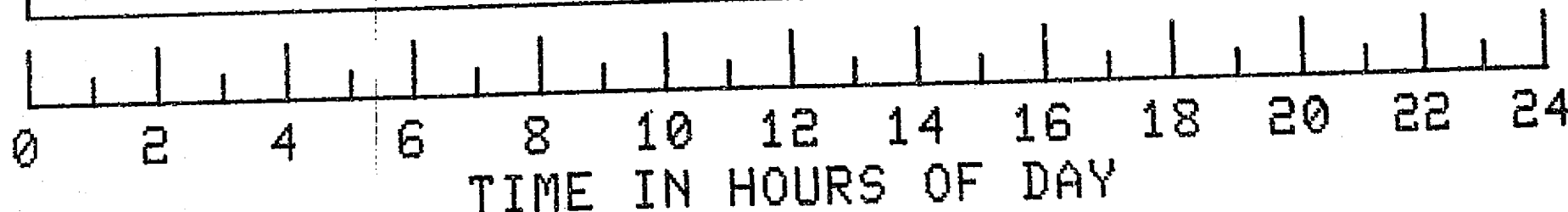
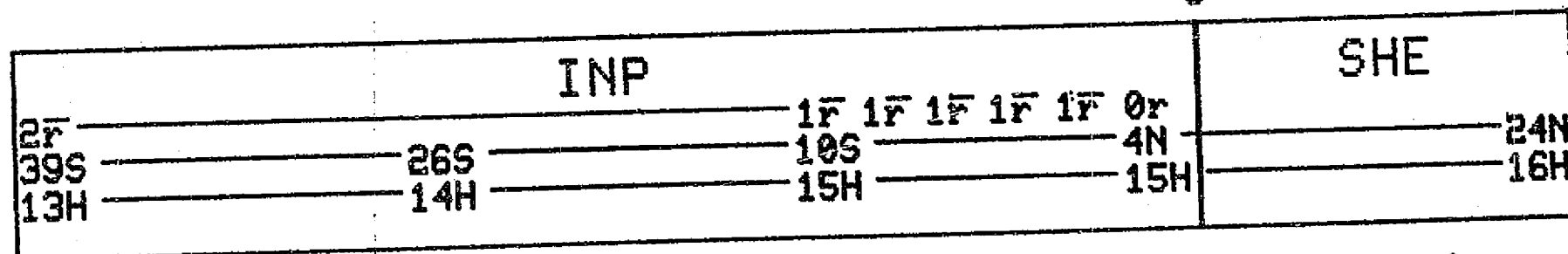


IMP-H



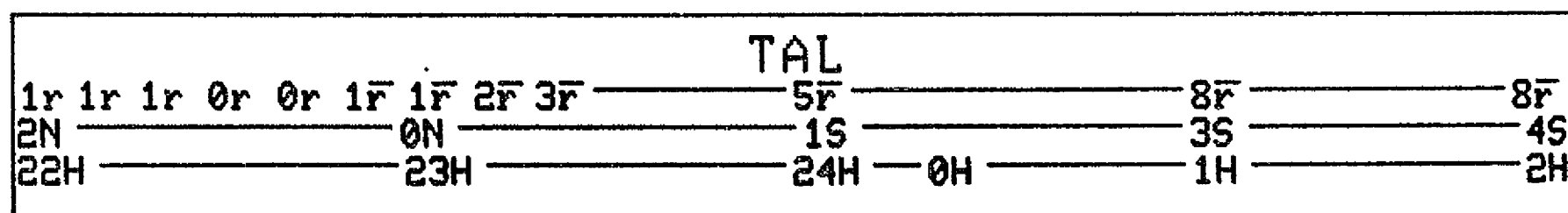
S

VELA
-5B

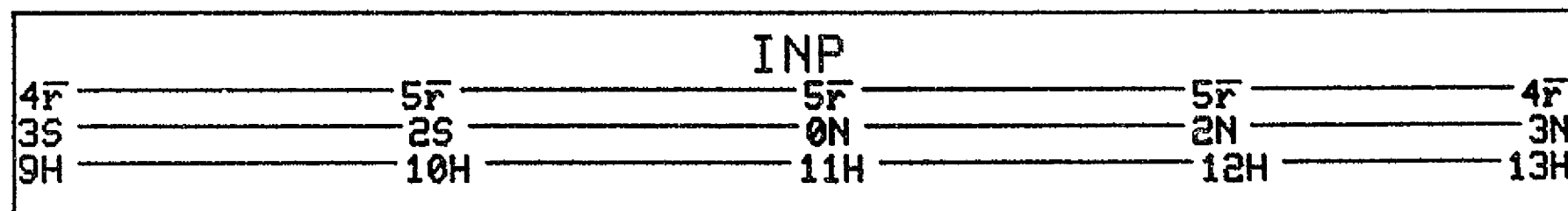


DAY 153 1977

SOL
RAD
-11A

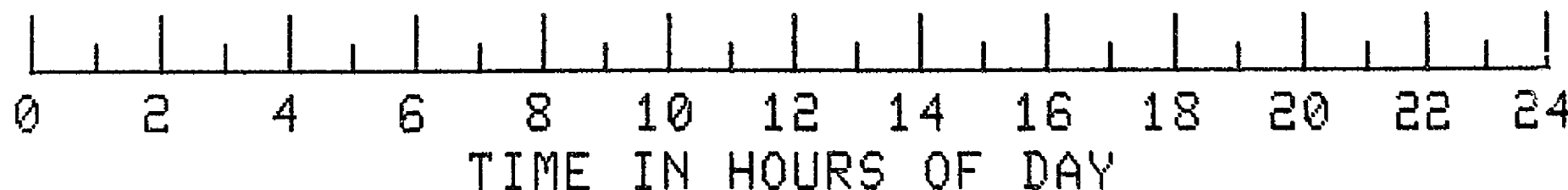
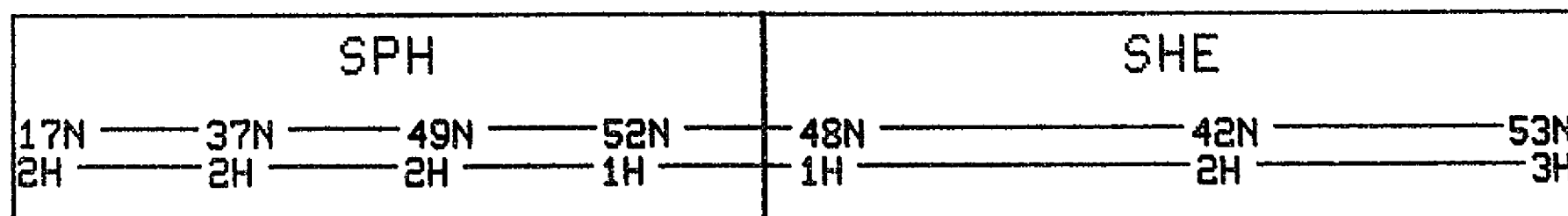


SOL
RAD
-11B



P

HAWK
EYE-1



DAY 154 1977

P

| | | | | | | | | | | | | | | | | | | | | |
|------|-----|----|----|----|----|----|----|----|----|--|-----|--|--|--|----|--|--|--|----|--|
| MOON | TAL | | | | | | | | | | SHE | | | | | | | | | |
| | 4r | 3r | 2r | 1r | 0r | 1r | 2r | 2r | 3r | | | | | | | | | | | |
| | 5N | | | | | 5N | | | 5N | | 5N | | | | 5N | | | | 5N | |
| | 1H | | | | | 1H | | | 1H | | 2H | | | | 2H | | | | 2H | |

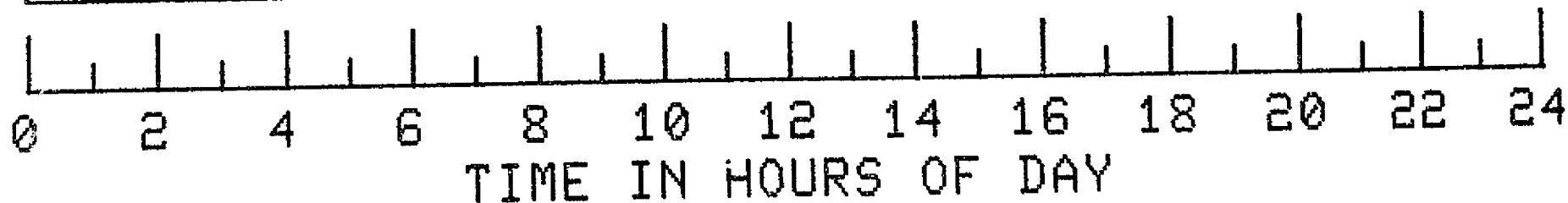
| | | | | | | | | | | | | | | | | | | | | |
|-------|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|--|
| IMP-J | INP | | | | | | | | | | | | | | | | | | | |
| | 10r | | | | | | | | | | | | | | | | | | | |
| | 34S | | | | | | | | | | | | | | | | | | 37S | |
| | 8H | | | | | | | | | | | | | | | | | | 11H | |

P

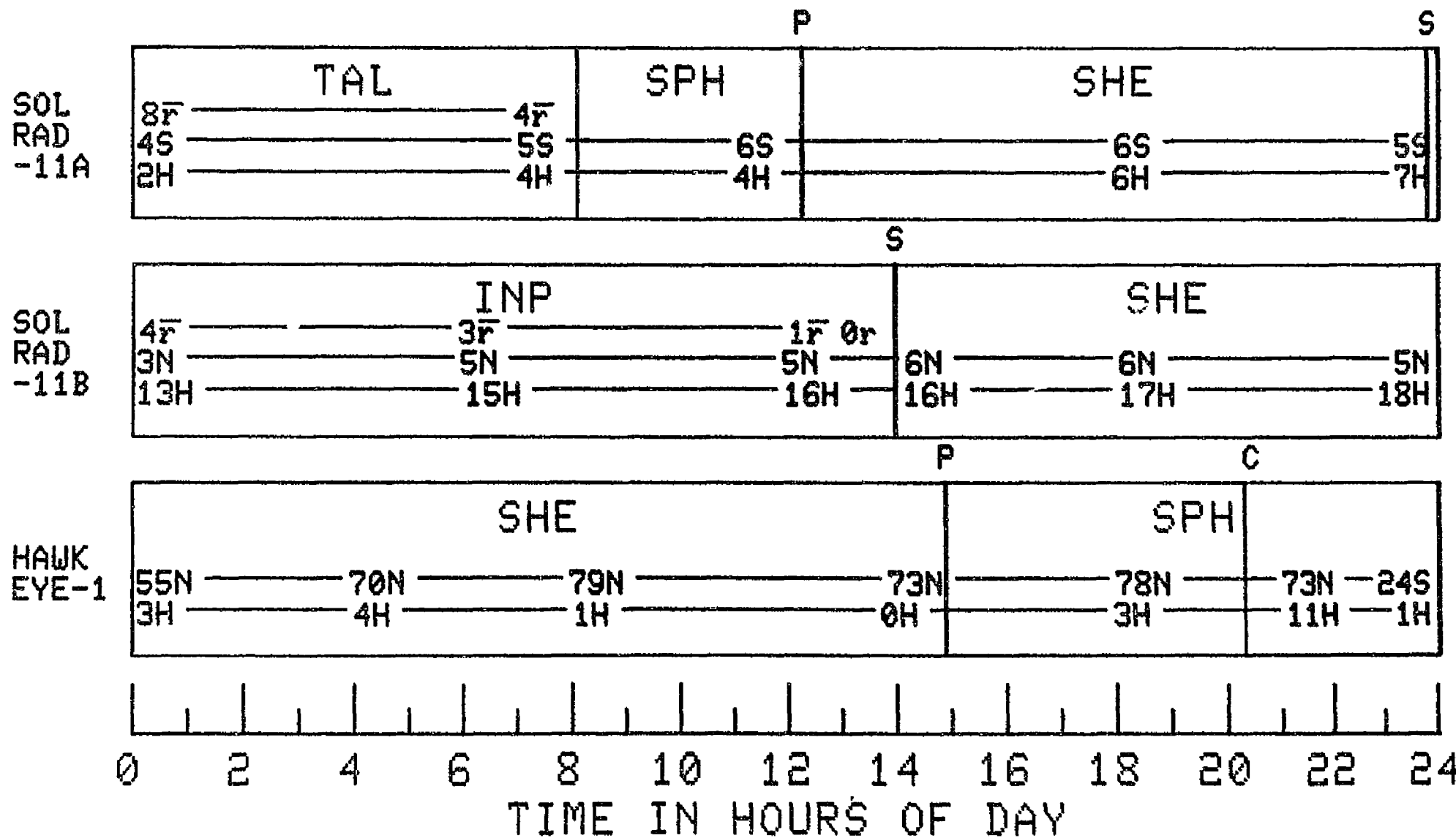
| | | | | | | | | | | | | | | | | | | | | |
|-------|-----|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----|--|--|--|--|
| IMP-H | TAL | | | | | | | | | | | | | | | SHE | | | | |
| | 7r | | | | | | | | | | | | | | | 18r | | | | |
| | 4S | | | | | | | | | | | | | | | 15S | | | | |
| | 1H | | | | | | | | | | | | | | | 2H | | | | |

P

| | | | | | | | | | | | | | | | | | | | | | | |
|-------------|-----|--|--|--|--|--|--|--|--|--|-----|--|--|--|--|--|--|--|--|--|-----|-----|
| VELA -5B | SHE | | | | | | | | | | SPH | | | | | | | | | | TAL | |
| | 24N | | | | | | | | | | 50N | | | | | | | | | | 10r | 10r |
| | 16H | | | | | | | | | | 19H | | | | | | | | | | 51N | 47N |
| | | | | | | | | | | | | | | | | | | | | | 23H | 23H |

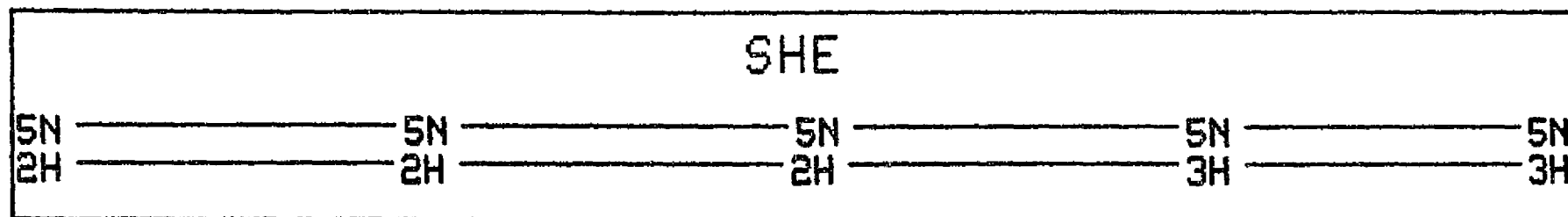


DAY 154 1977

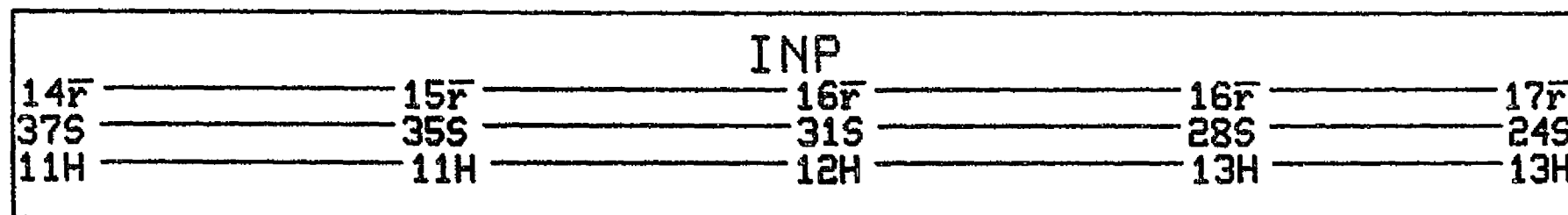


DAY 155 1977

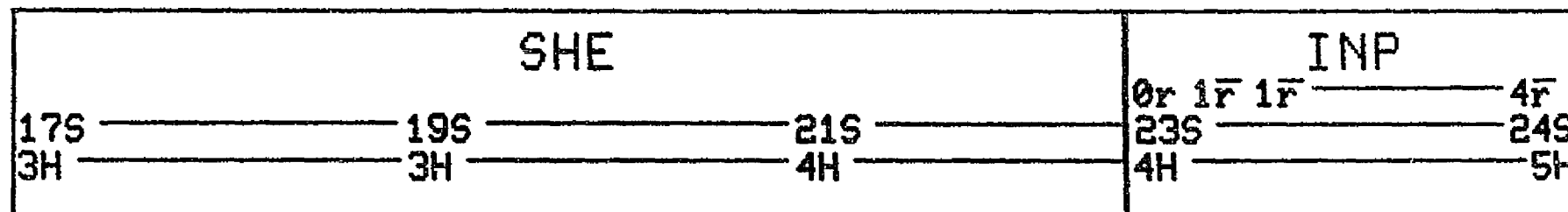
MOON



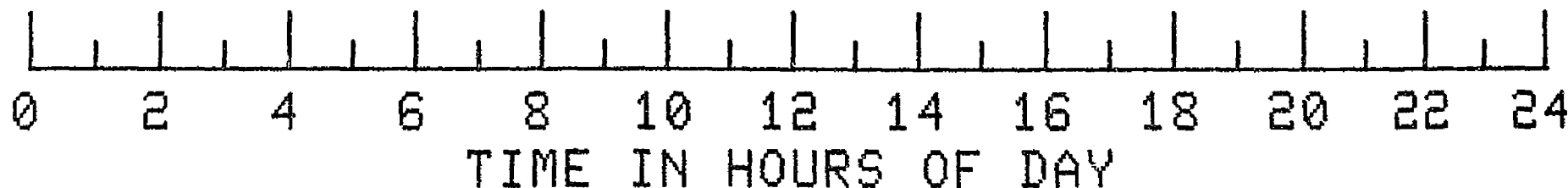
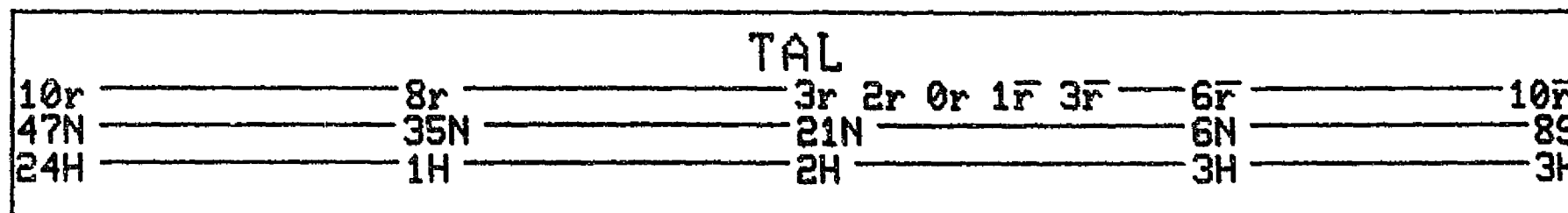
IMP-J



IMP-H

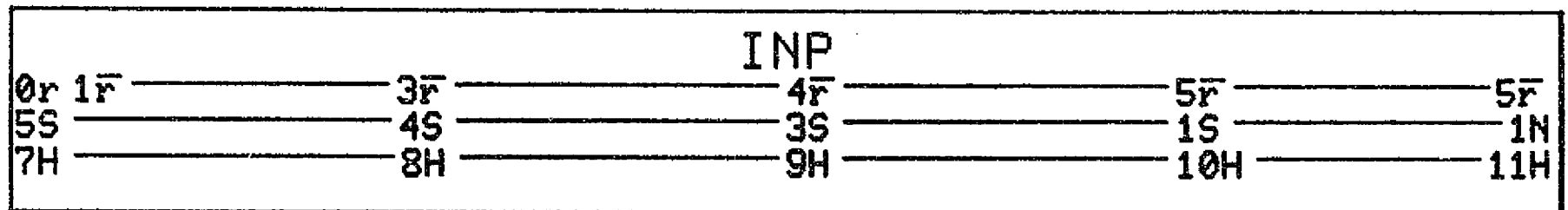


VELA
-5B



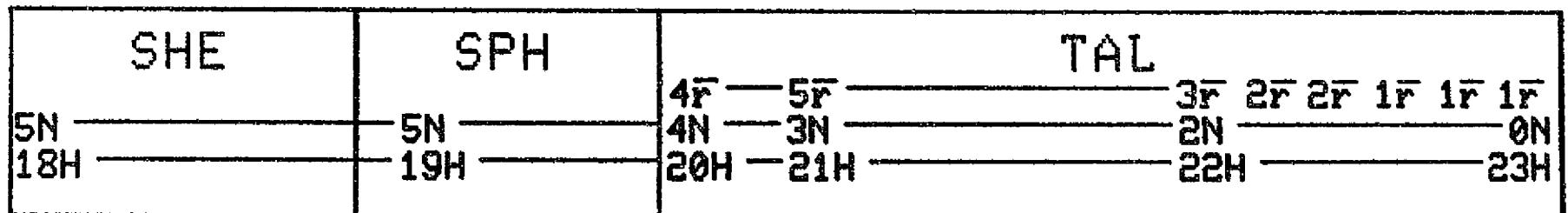
DAY 155 1977

SOL
RAD
-11A



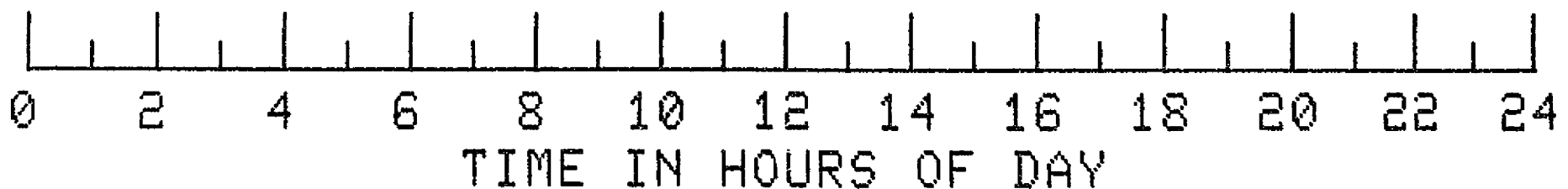
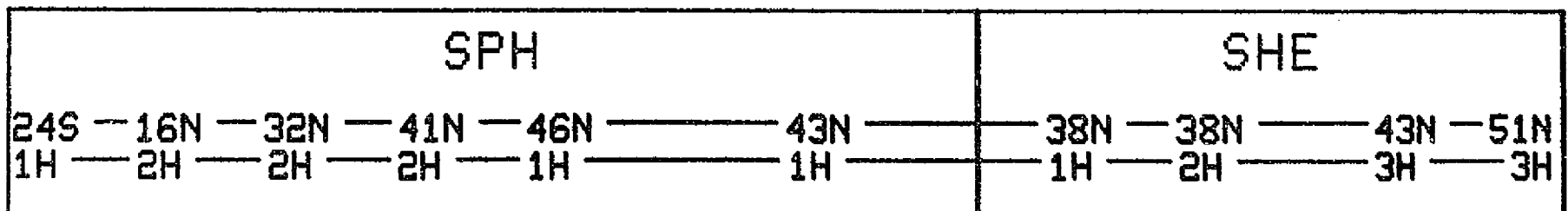
P

SOL
RAD
-11B



P

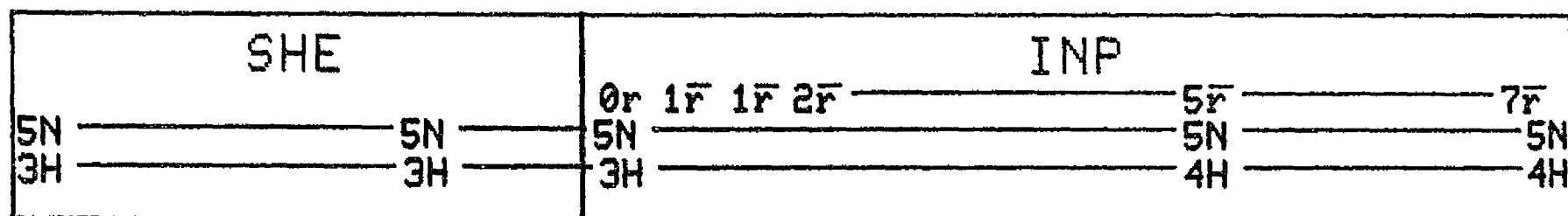
HAWK
EYE-1



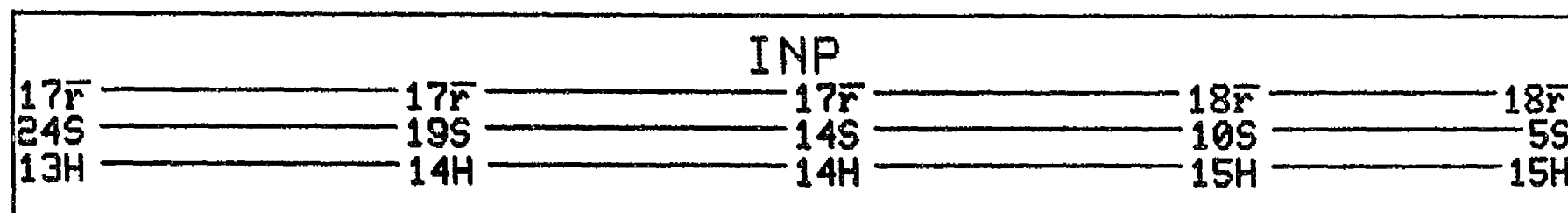
DAY 156 1977

S

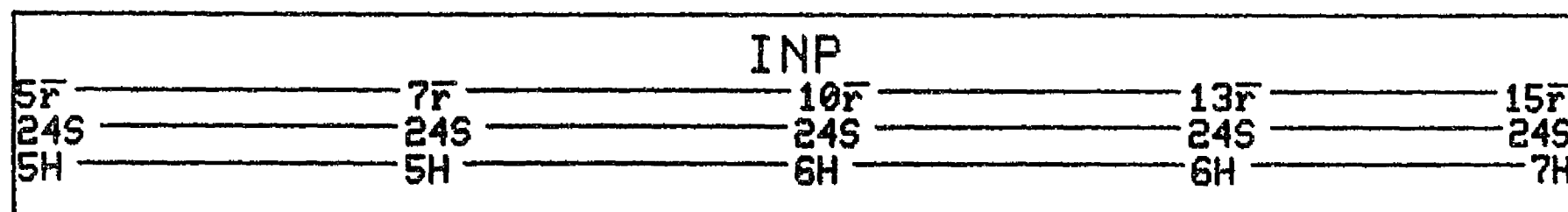
MOON



IMP-J

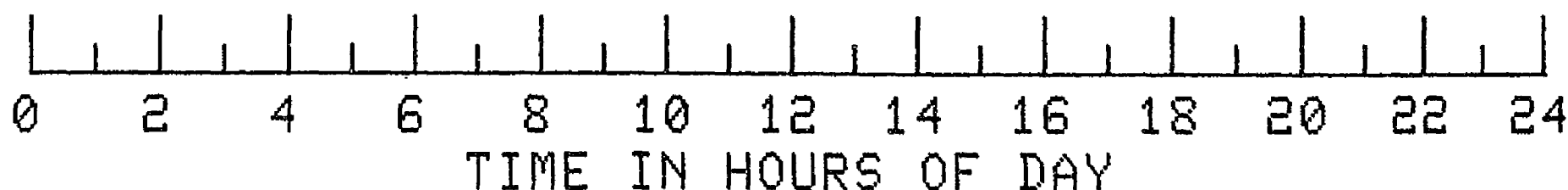
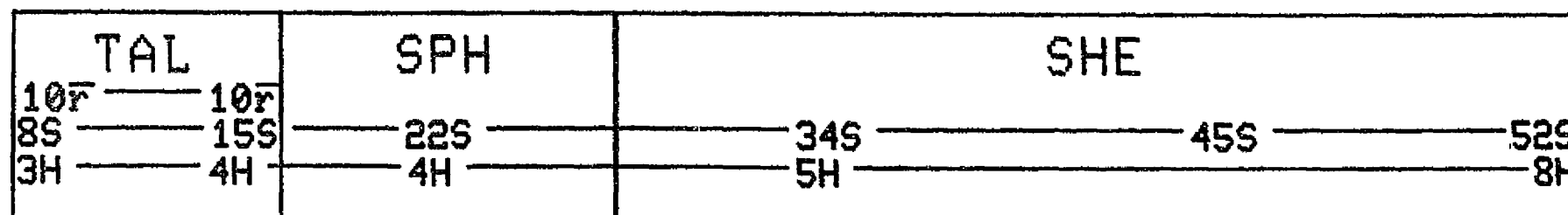


IMP-H



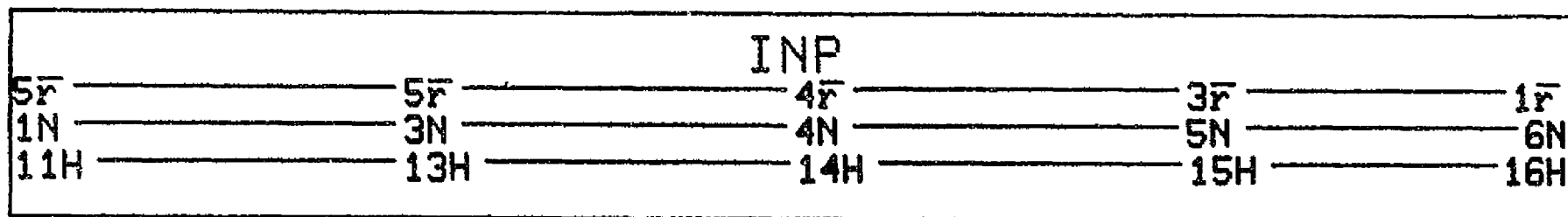
P

VELA
-5B

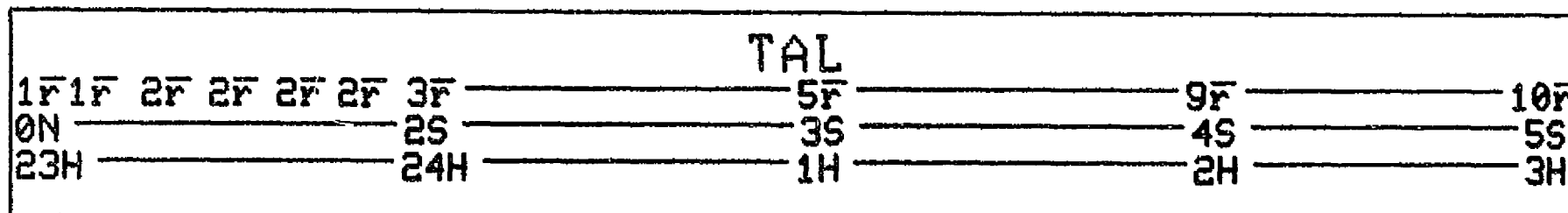


DAY 156 1977

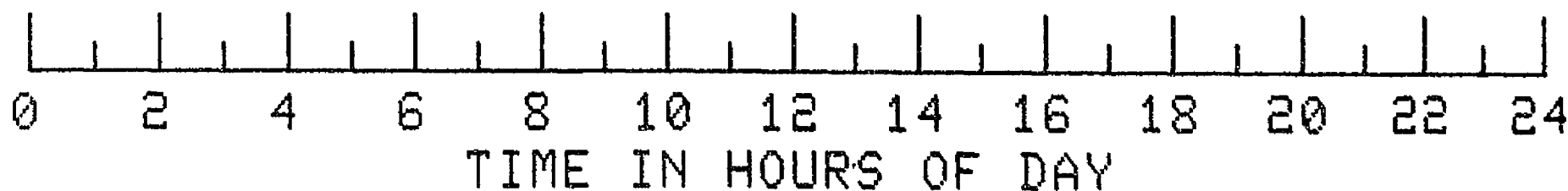
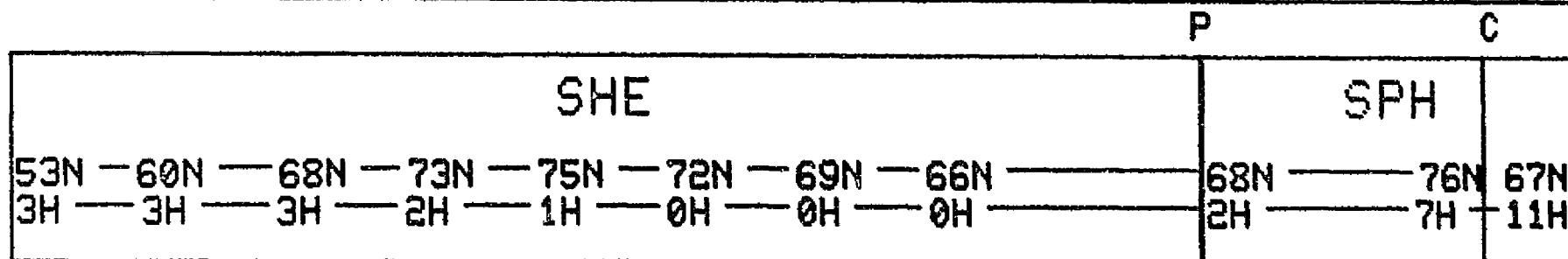
SOL
RAD
-11A



SOL
RAD
-11B

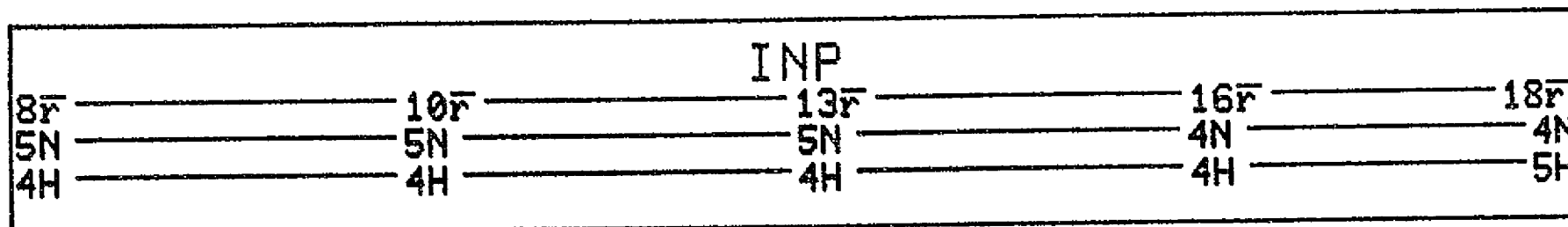


HAWK
EYE-1

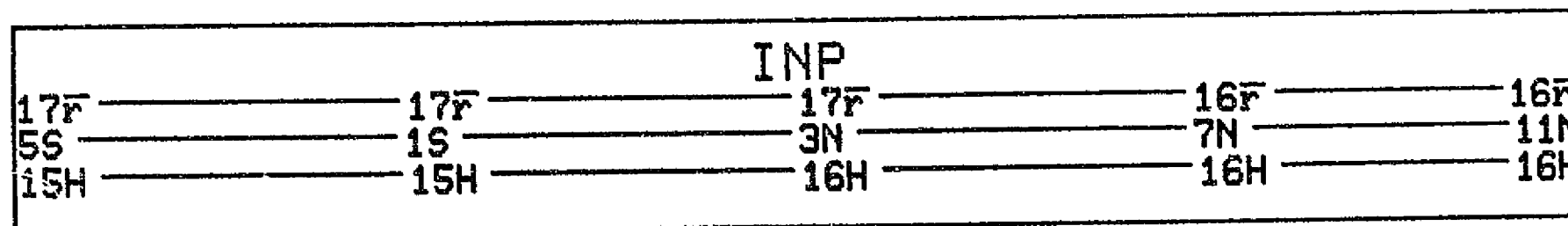


DAY 157 1977

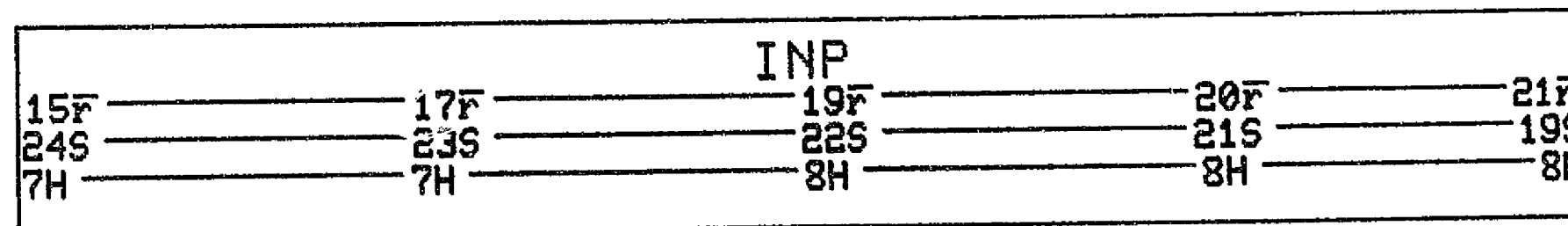
MOON



IMP-J

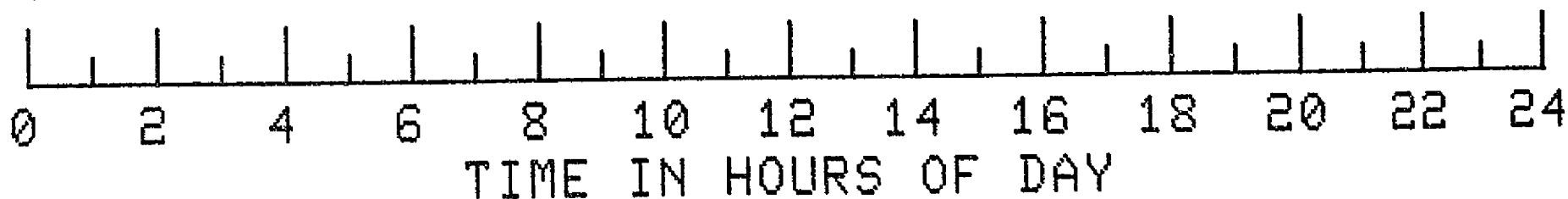
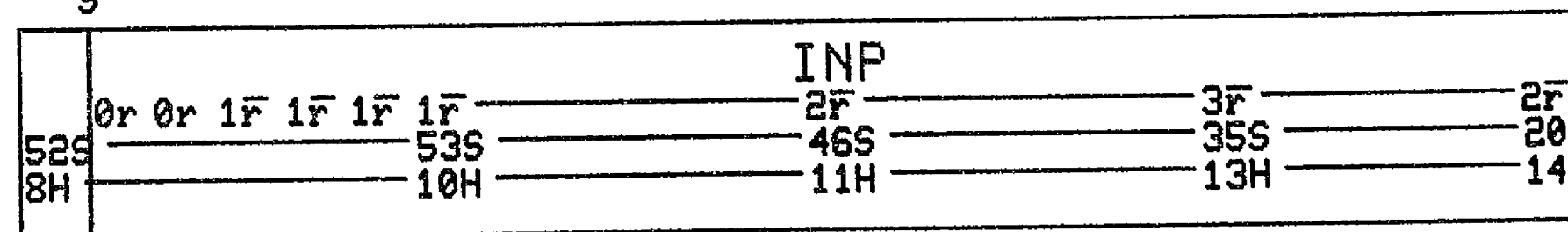


IMP-H

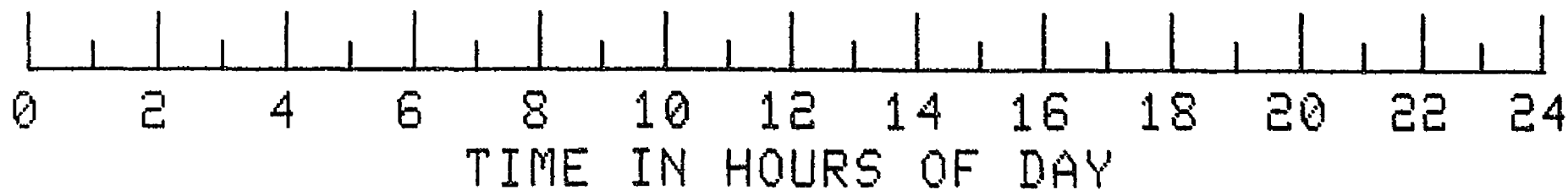
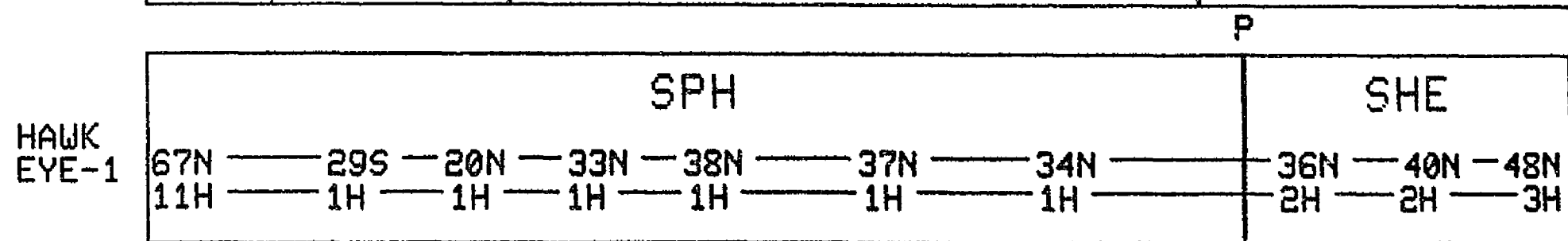
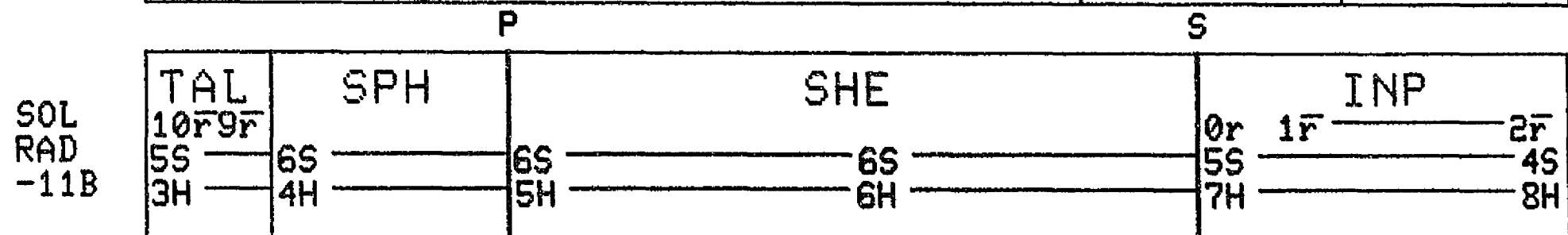
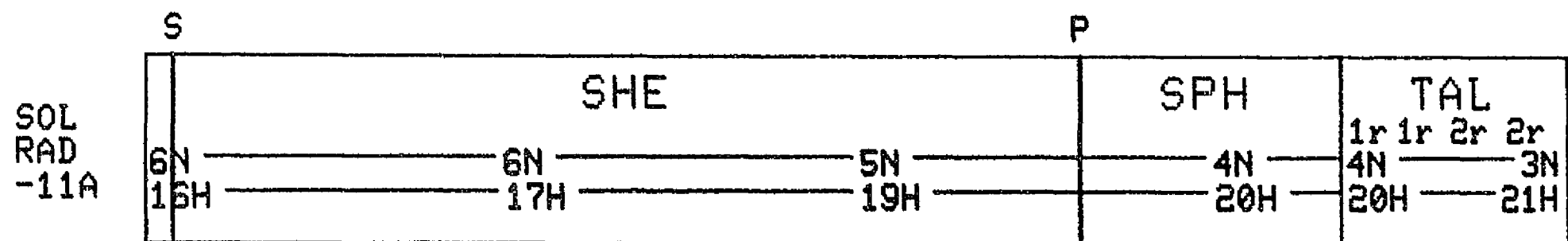


S

VELA
-5B

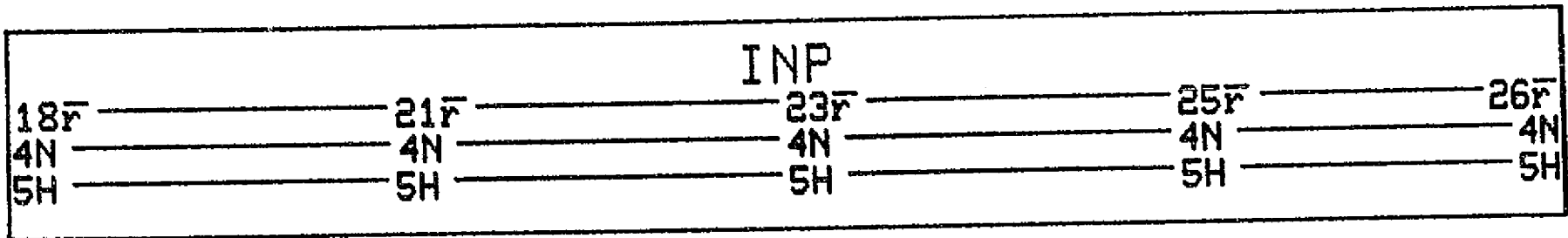


DAY 157 1977

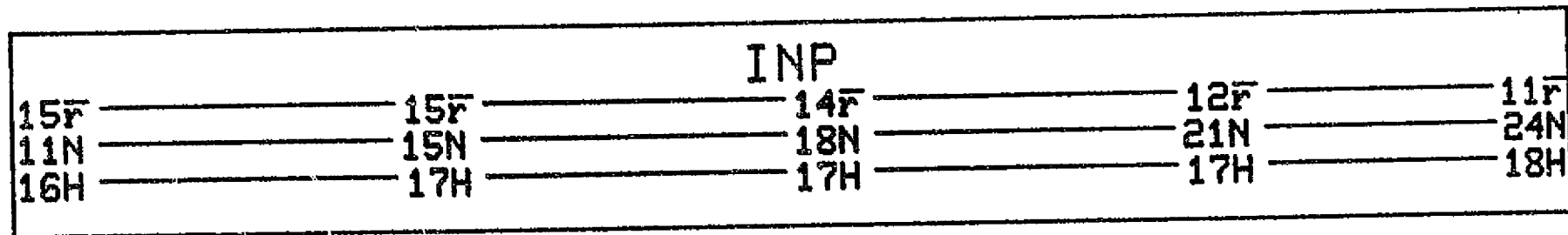


DAY 158 1977

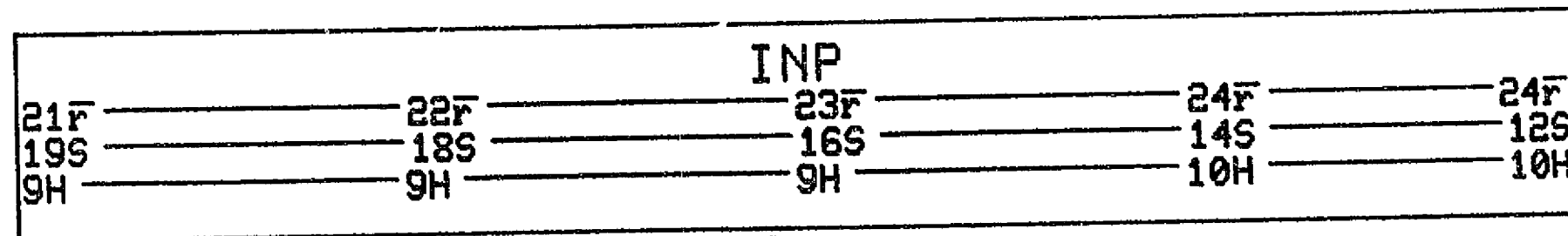
MOON



IMP-J

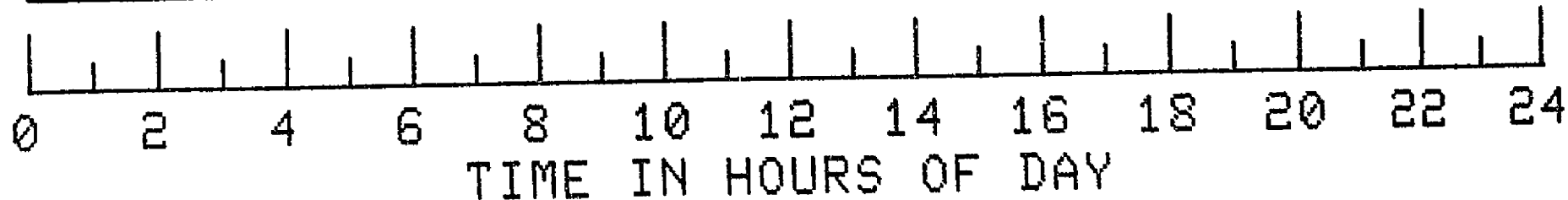
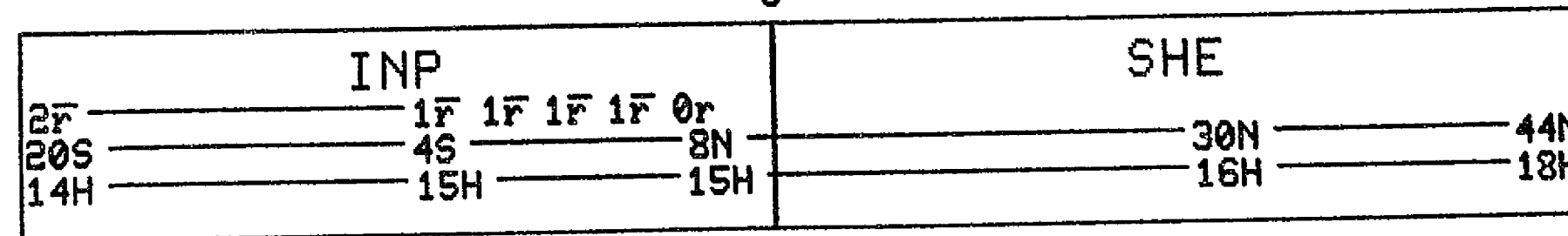


IMP-H



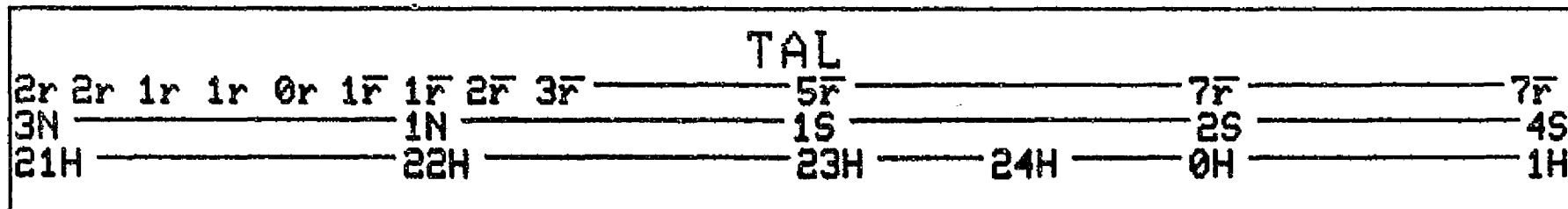
S

VELA
-5B

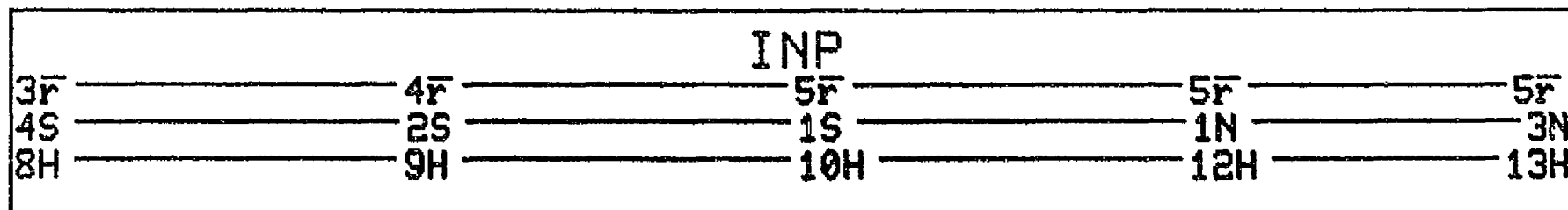


DAY 158 1977

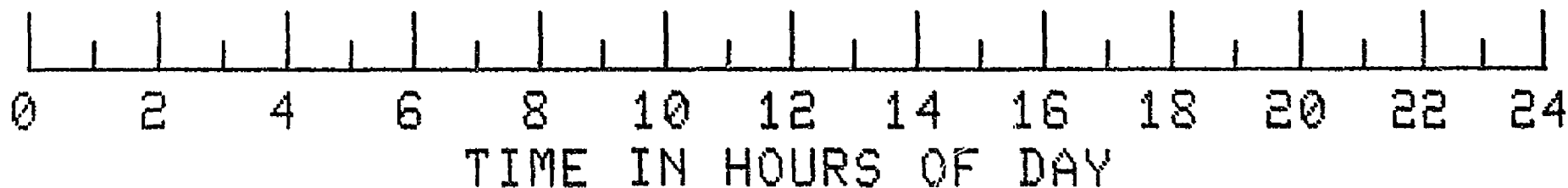
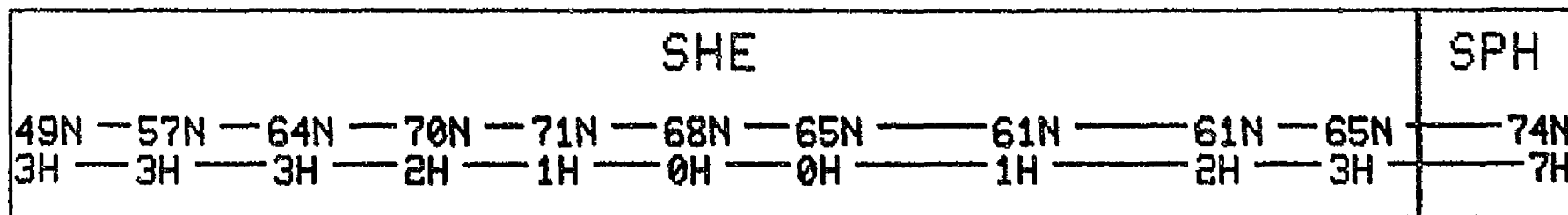
SOL
RAD
-11A



SOL
RAD
-11B

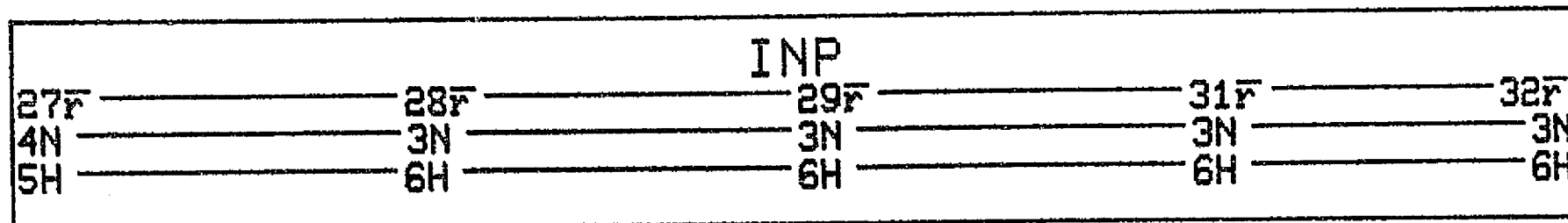


HAWK
EYE-1

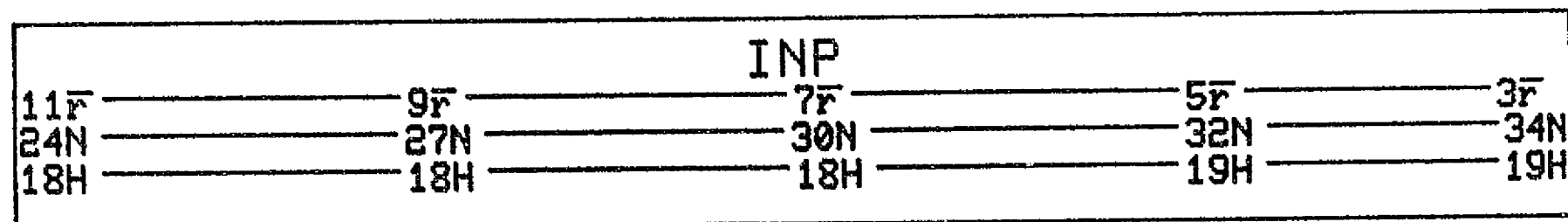


DAY 159 1977

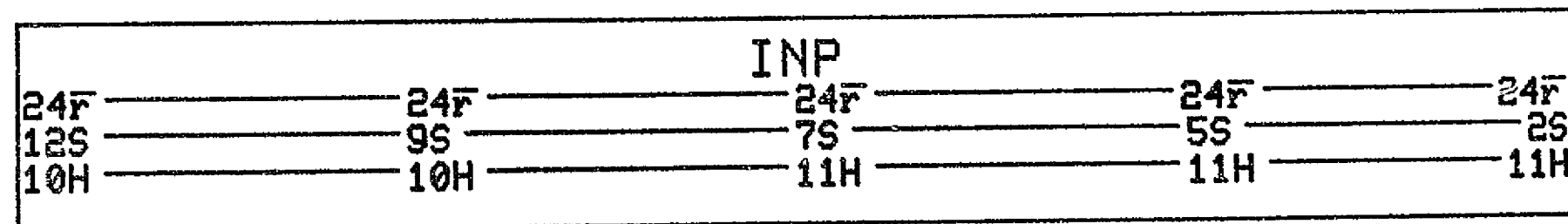
MOON



IMP-J

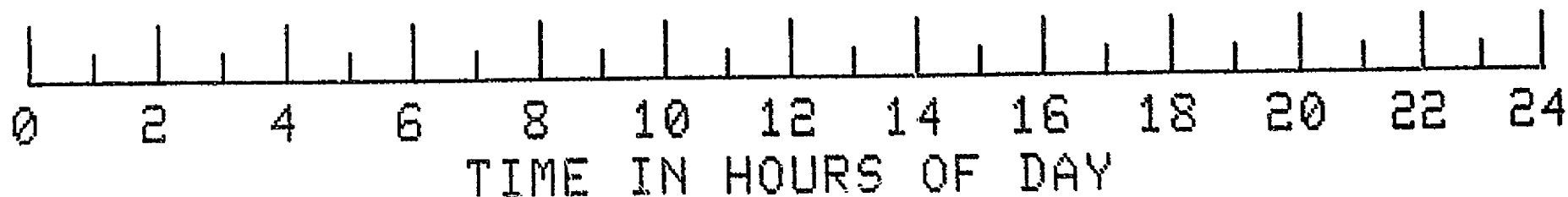
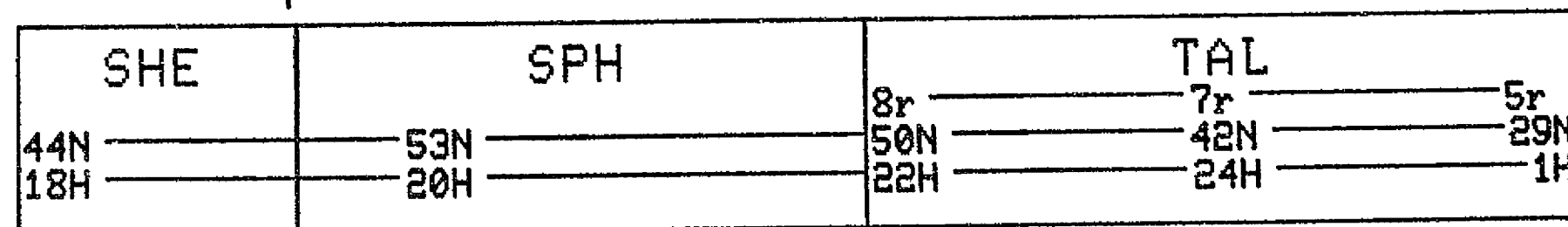


IMP-H

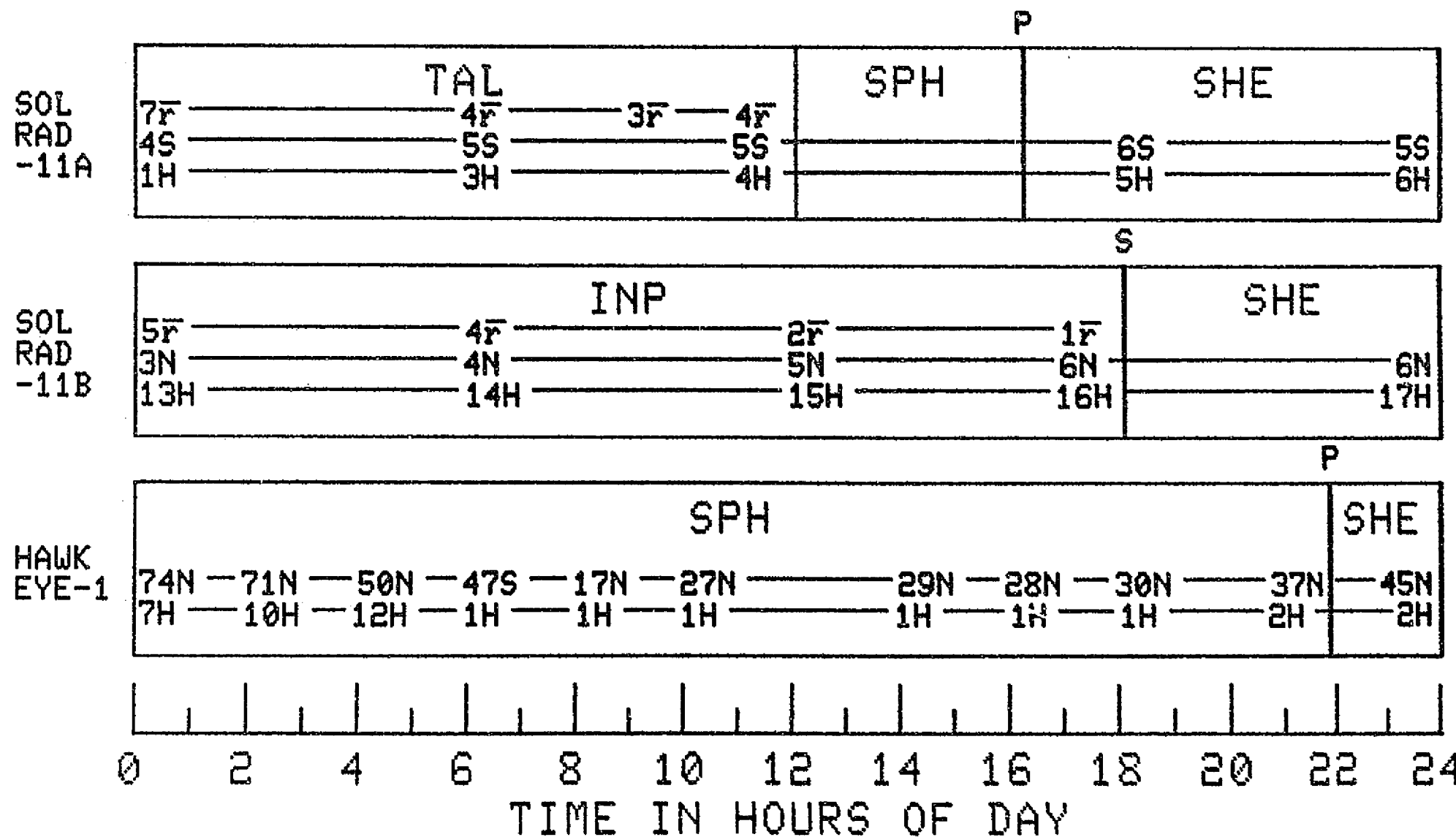


P

VELA
-5B

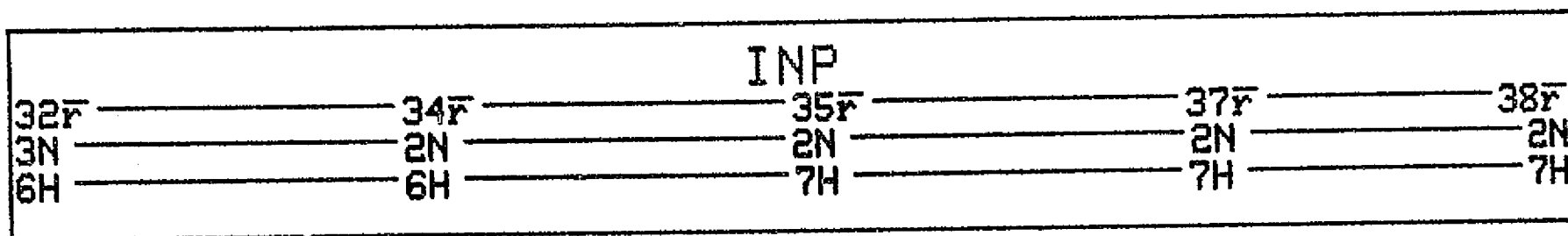


DAY 159 1977



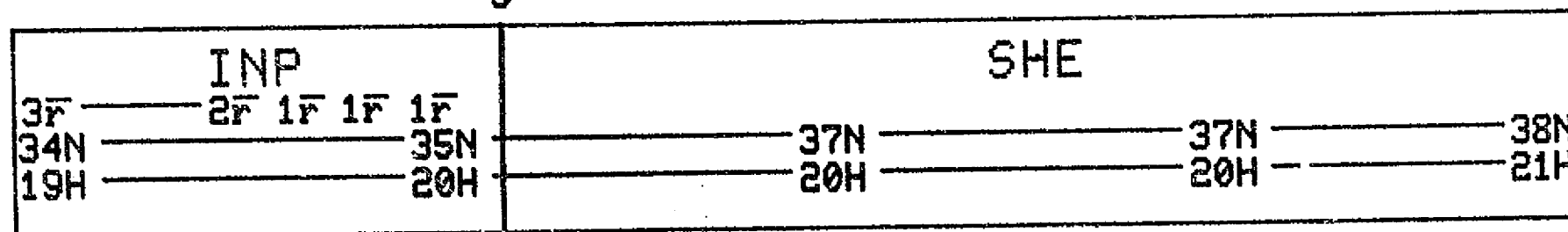
DAY 160 1977

MOON

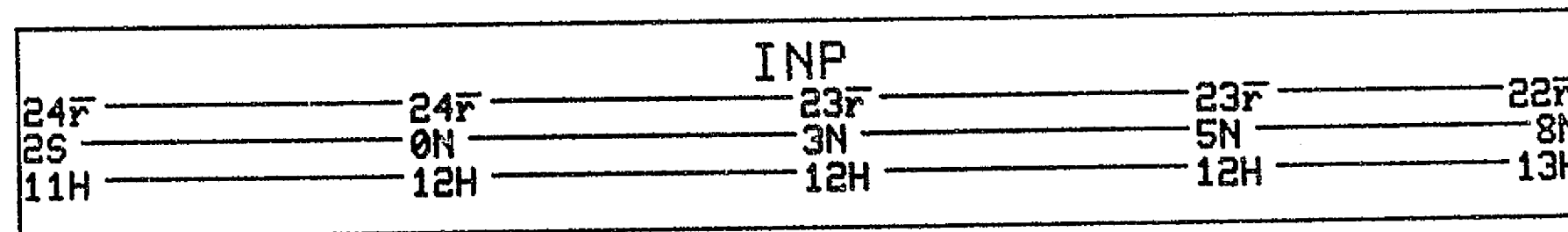


S

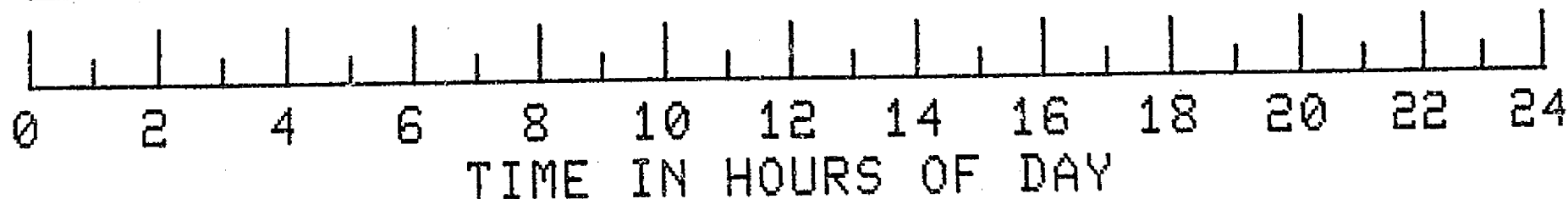
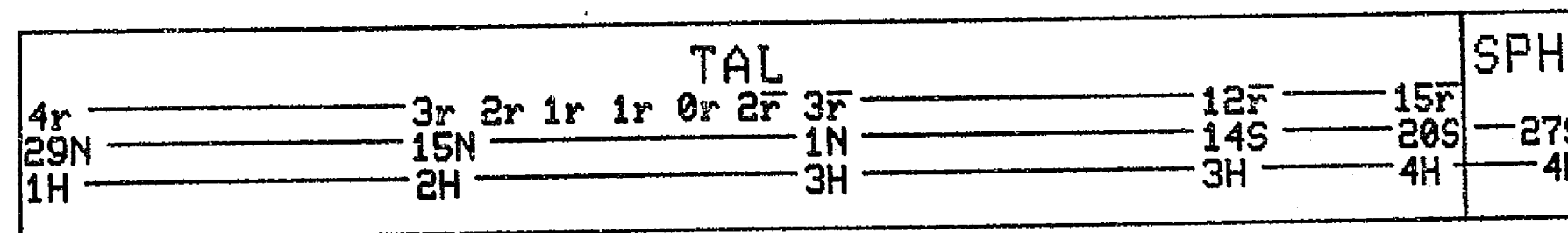
IMP-J



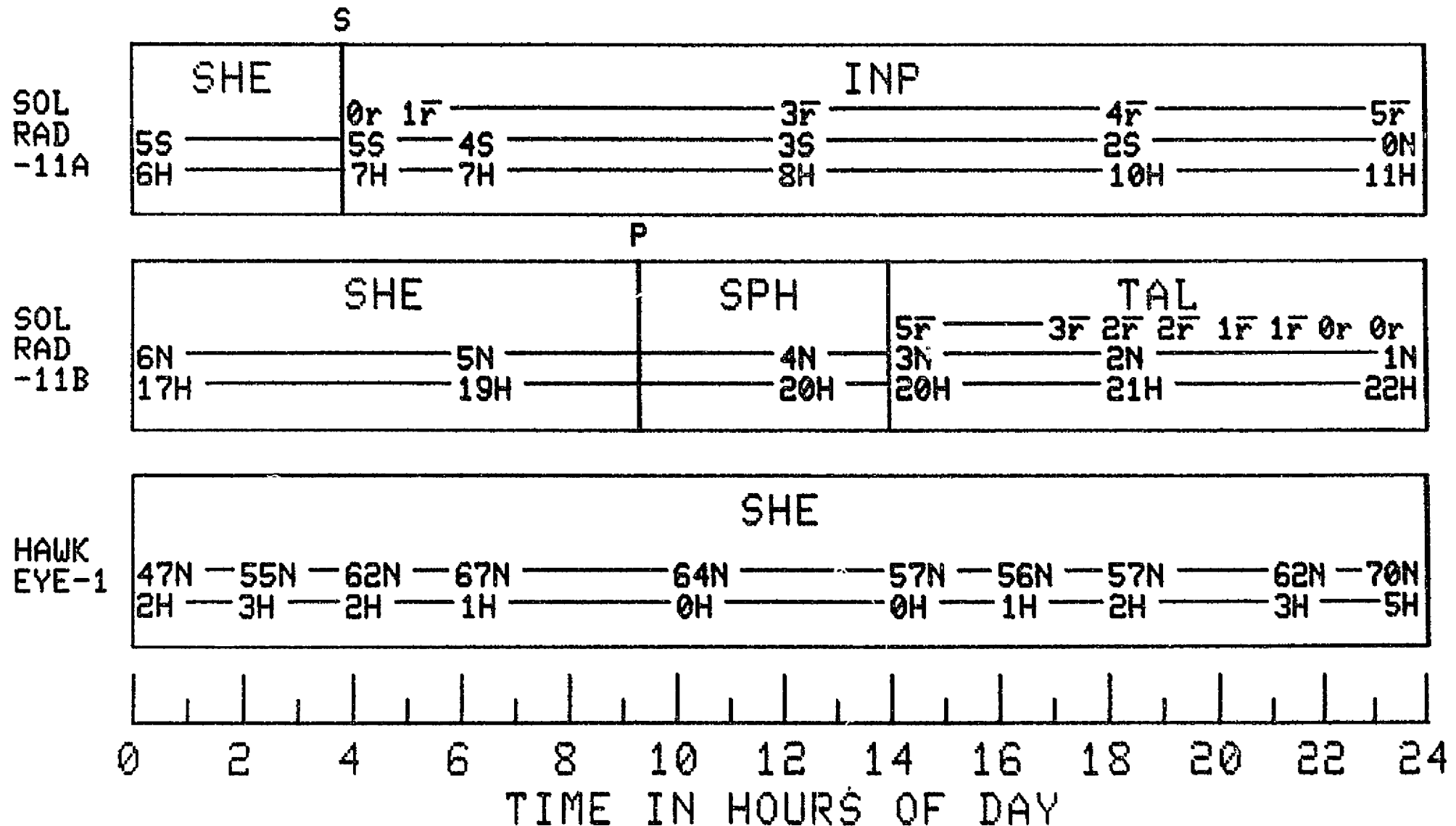
IMP-H



UELA
-5B

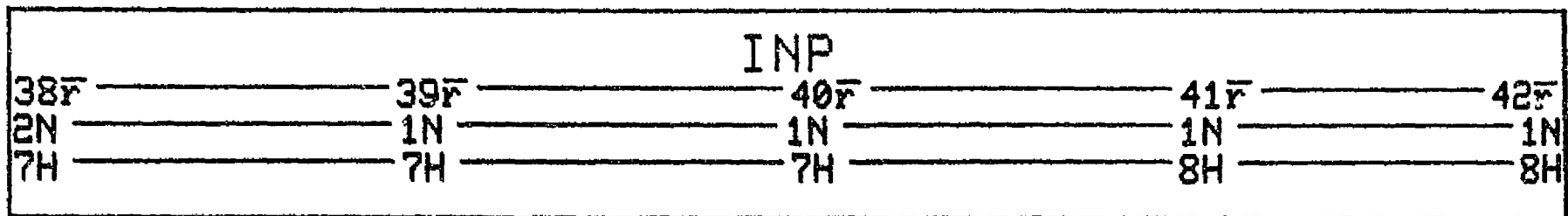


DAY 160 1977

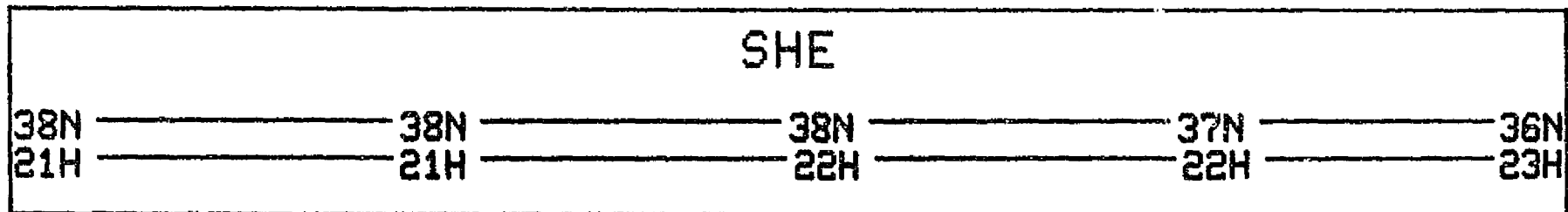


DAY 161 1977

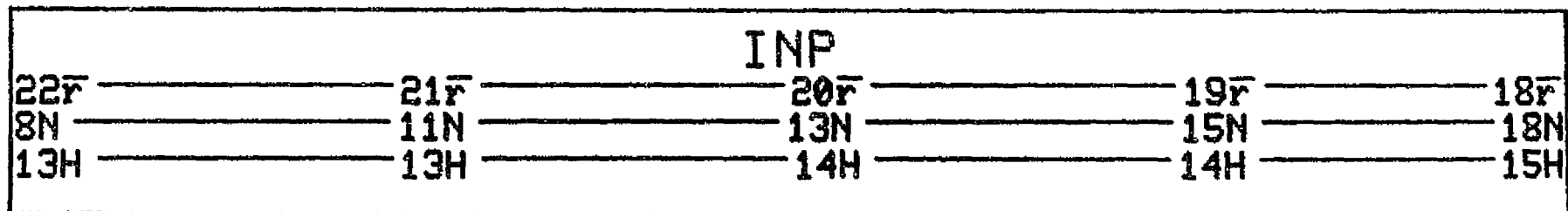
MOON



IMP-J



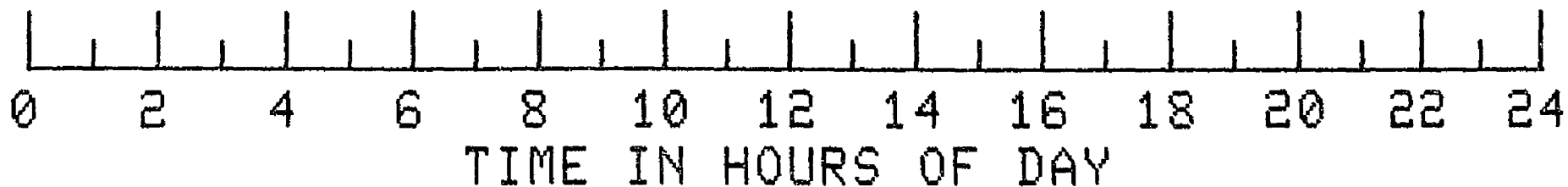
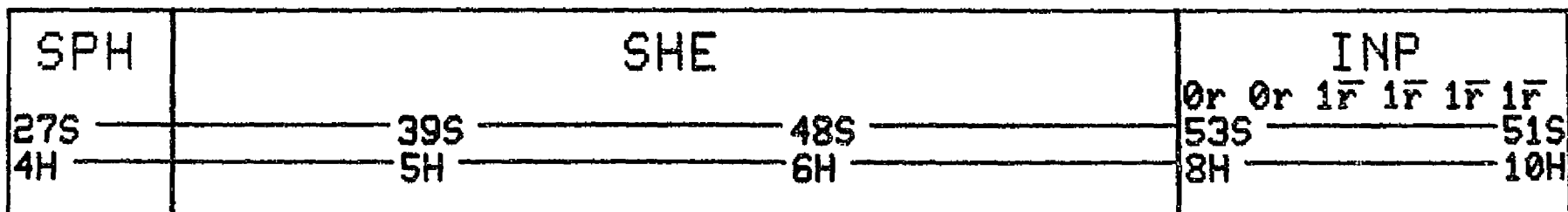
IMP-H



P

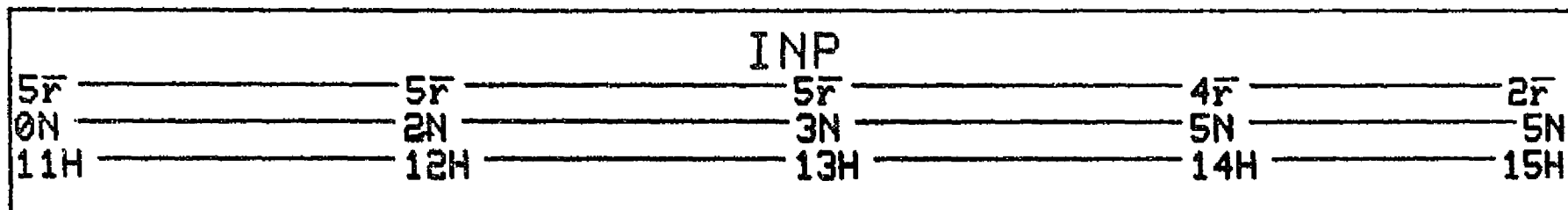
S

VELA
-5B

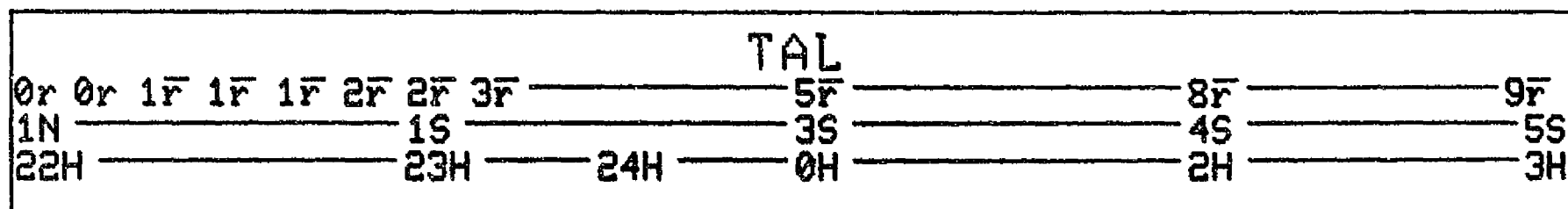


DAY 161 1977

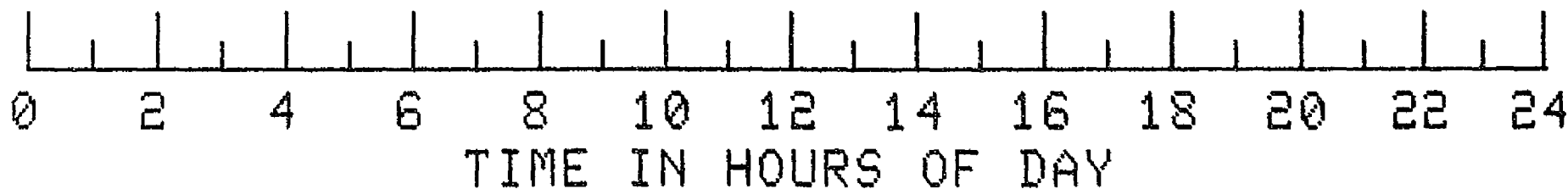
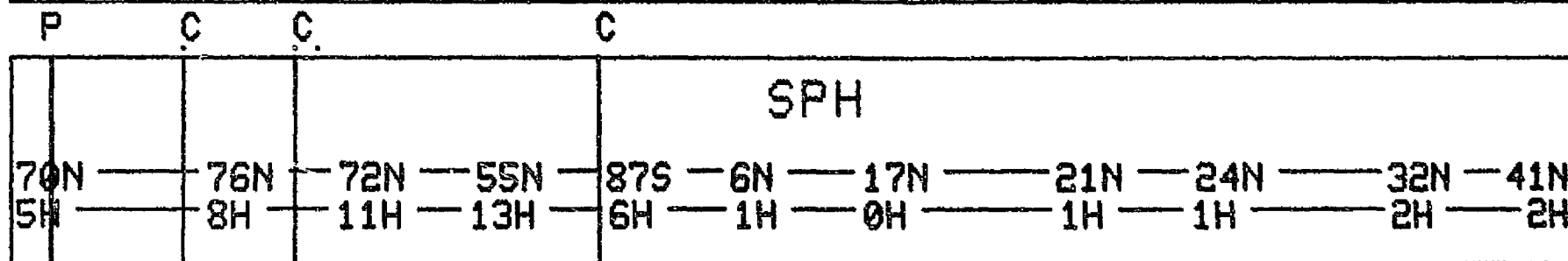
SOL
RAD
-11A



SOL
RAD
-11B

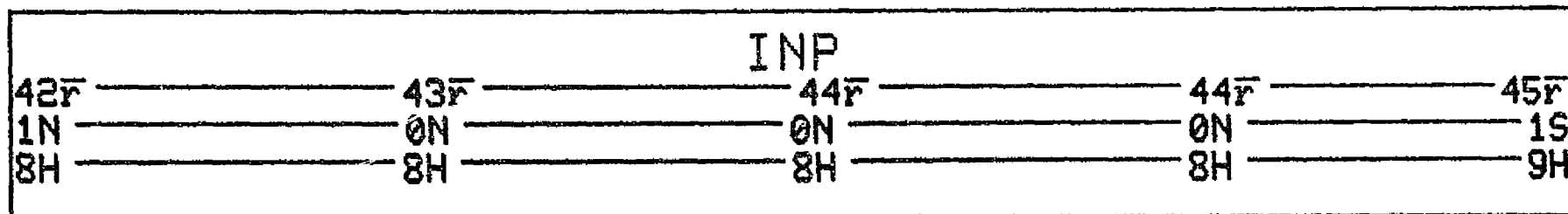


HAWK
EYE-1



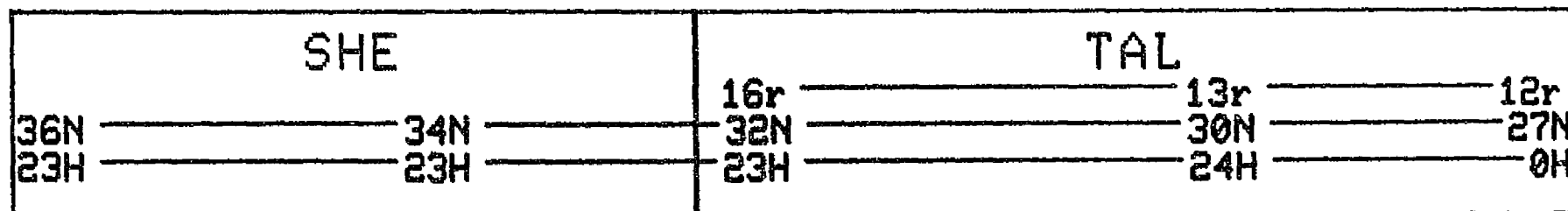
DAY 162 1977

MOON

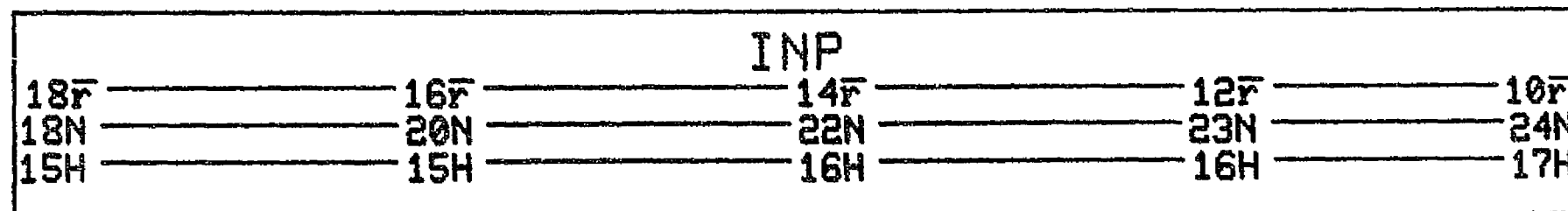


P

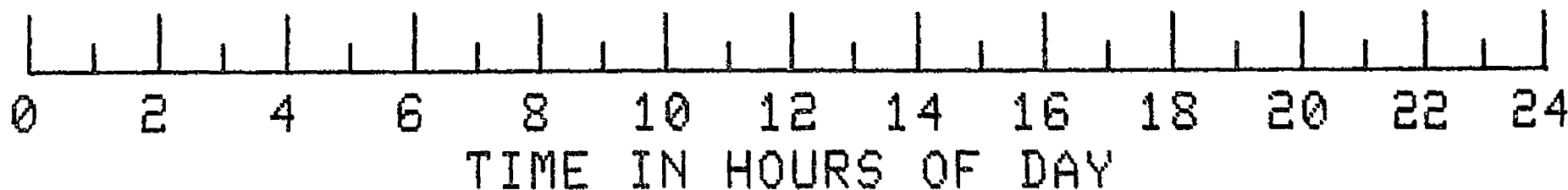
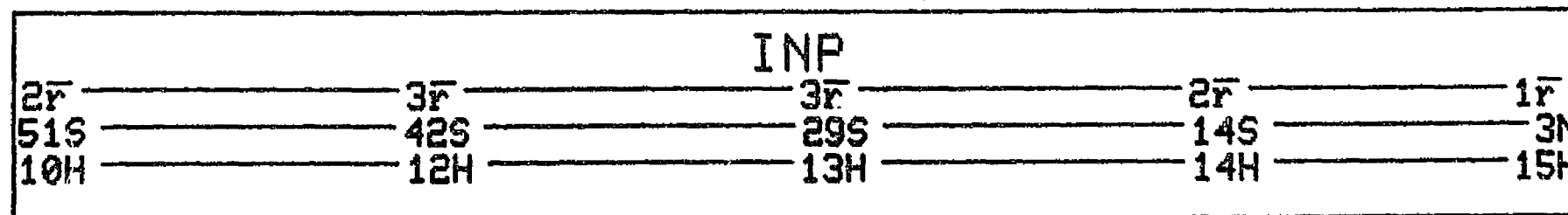
IMP-J



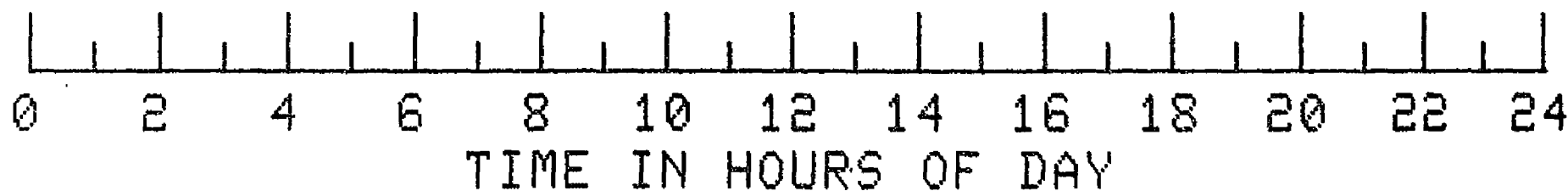
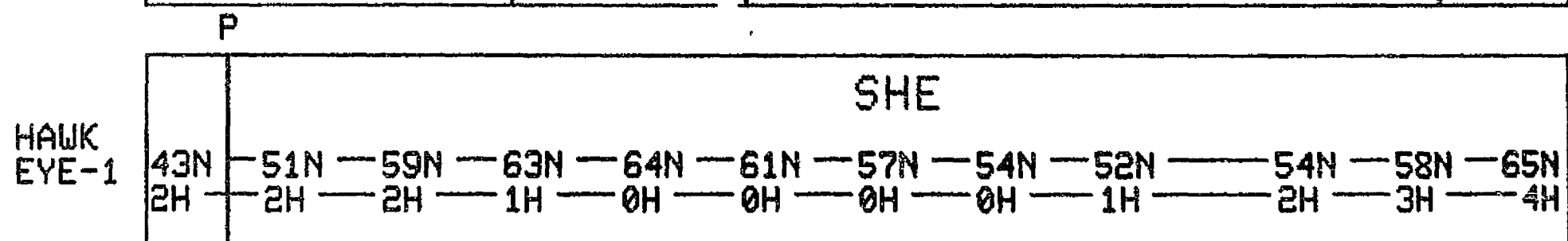
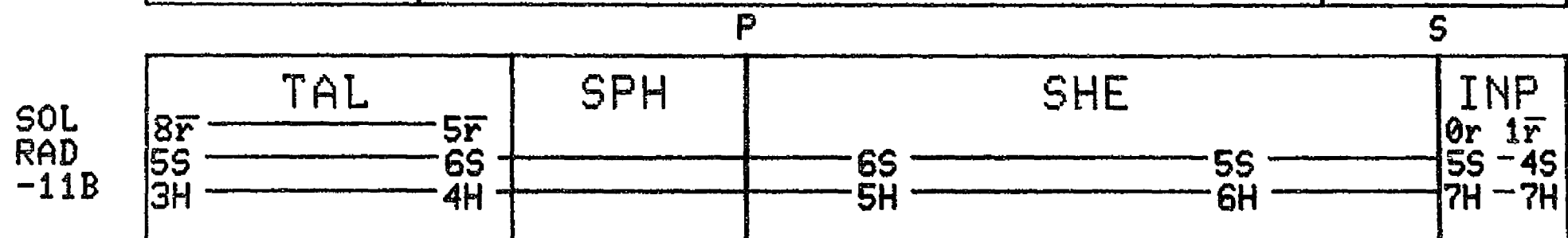
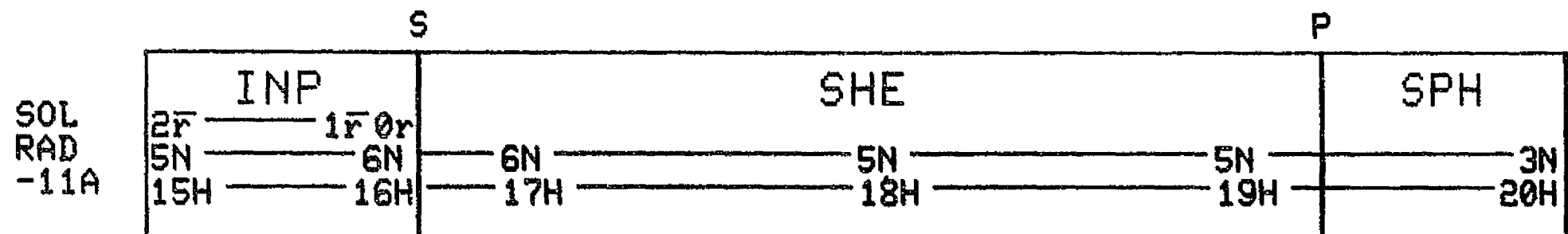
IMP-H



VELA
-5B

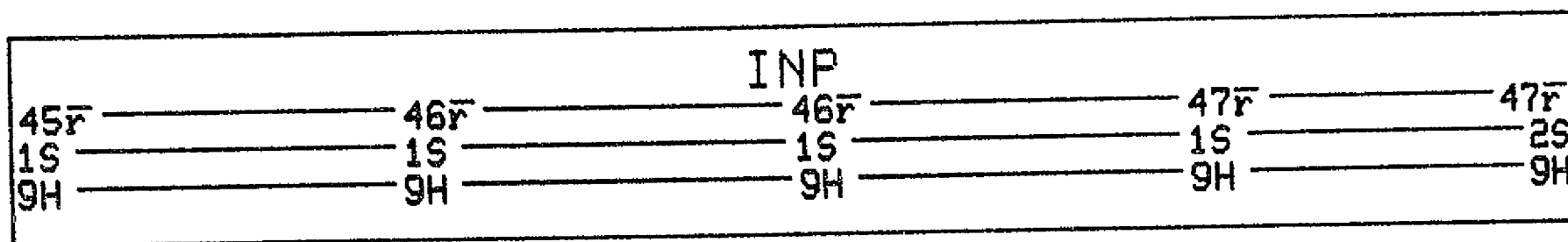


DAY 162 1977

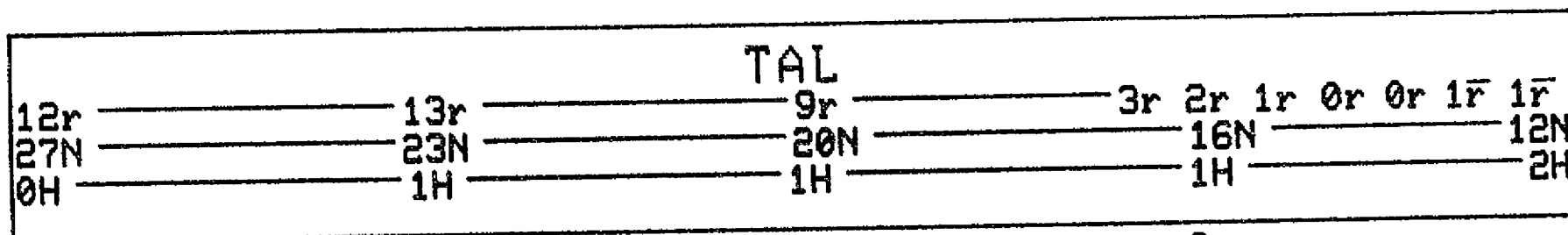


DAY 163 1977

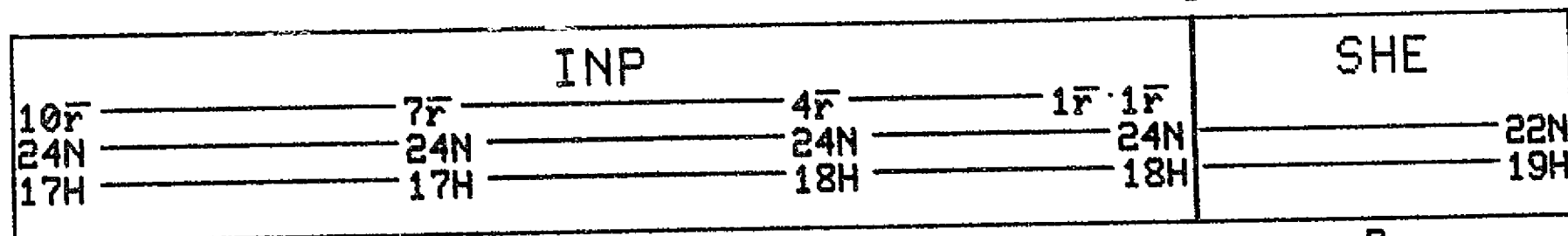
MOON



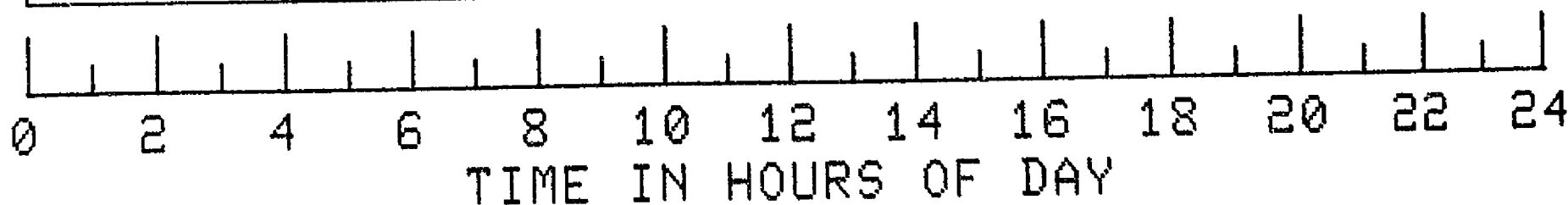
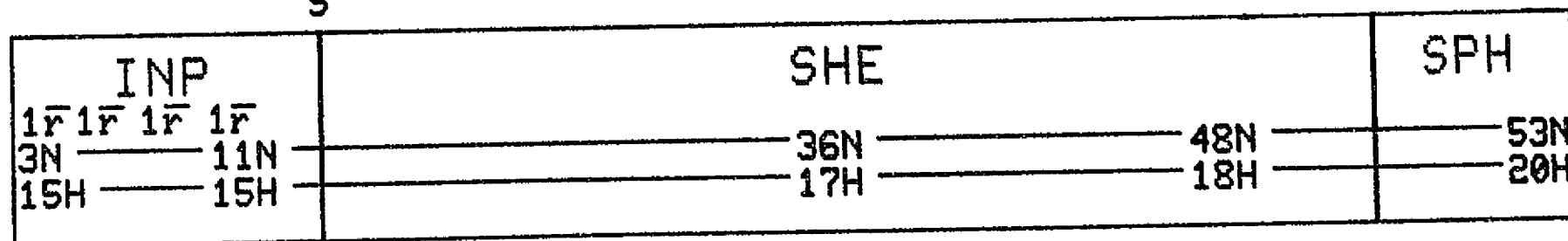
IMP-J



IMP-H

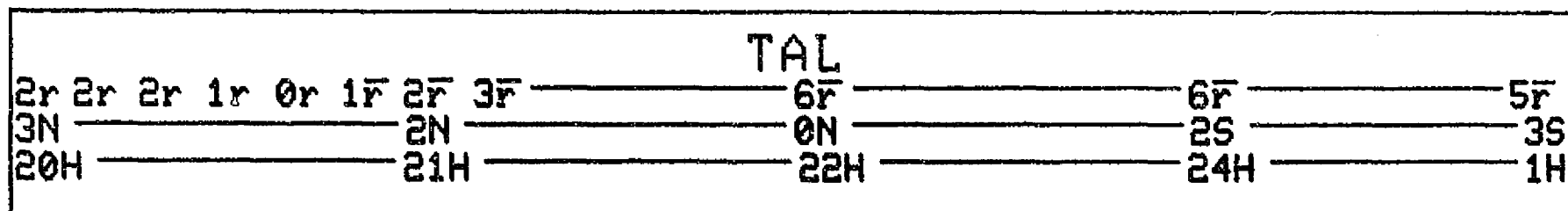


VELA
-5B

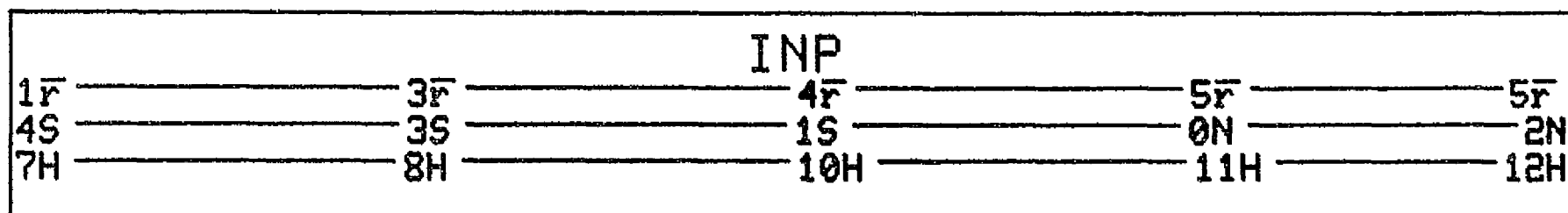


DAY 163 1977

SOL
RAD
-11A



SOL
RAD
-11B



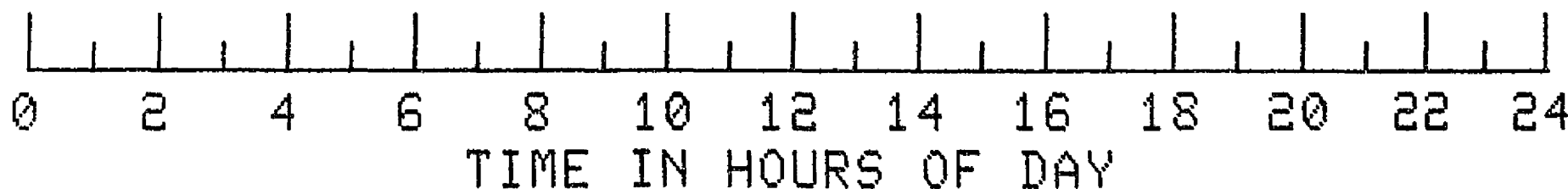
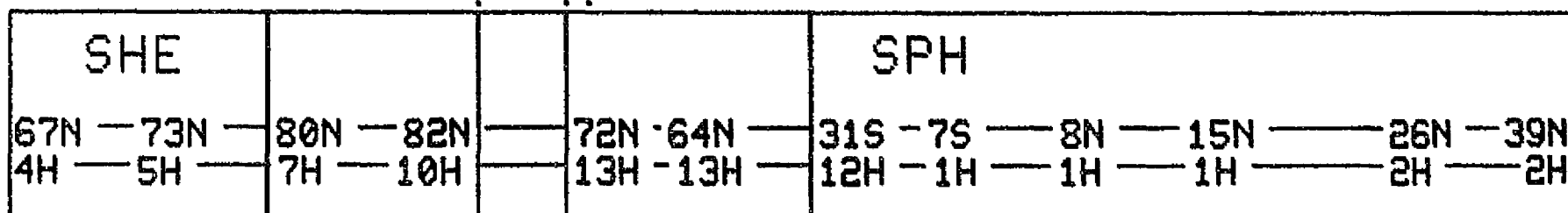
P

C

C

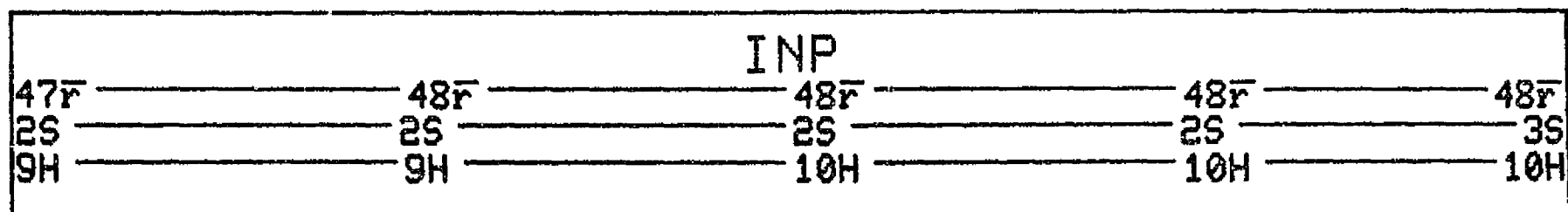
C

HAWK
EYE-1



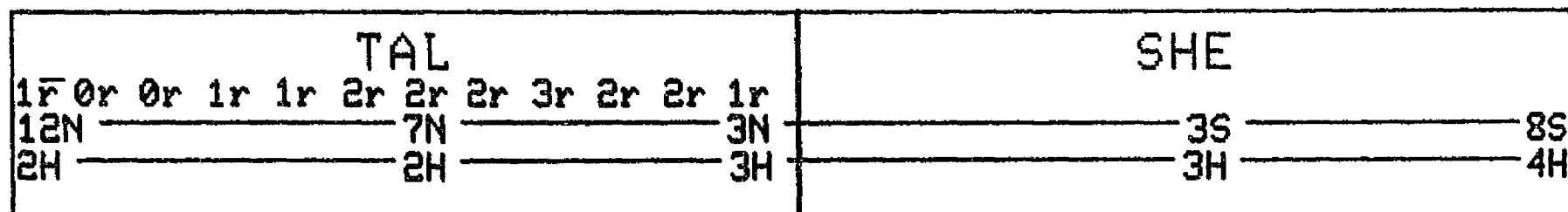
DAY 164 1977

MOON



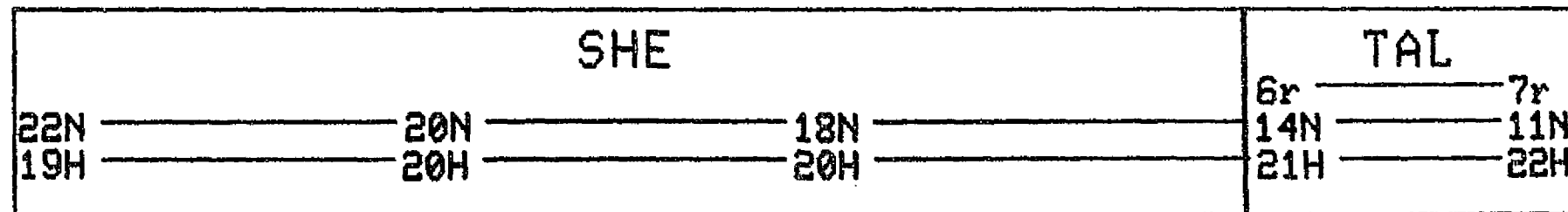
P

IMP-J

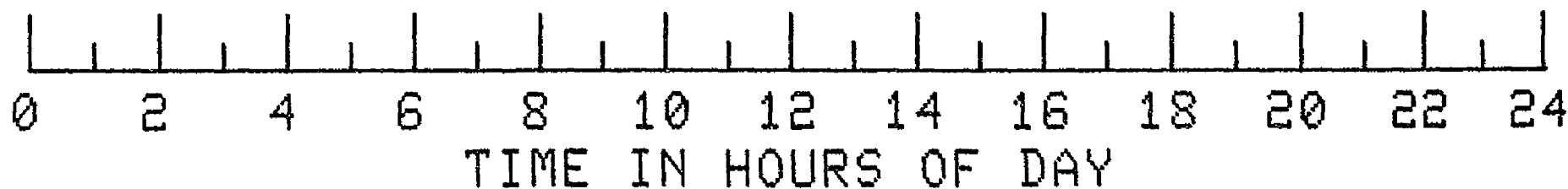
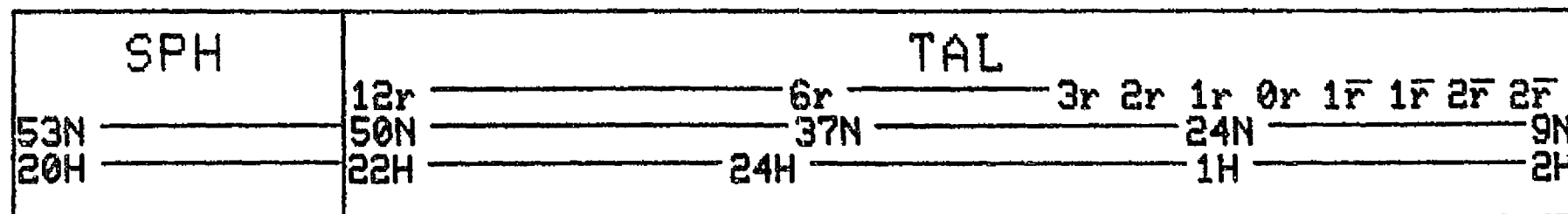


P

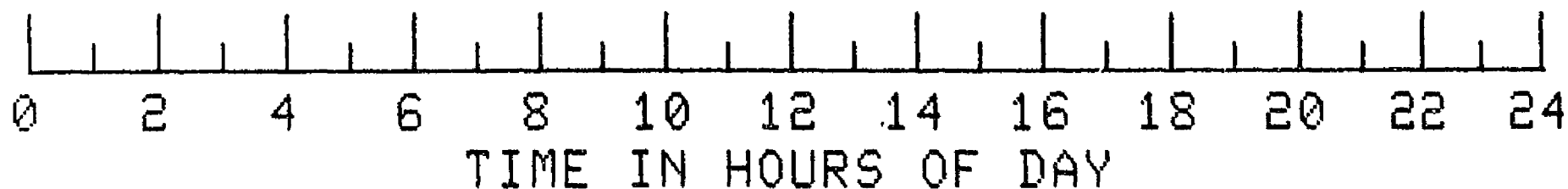
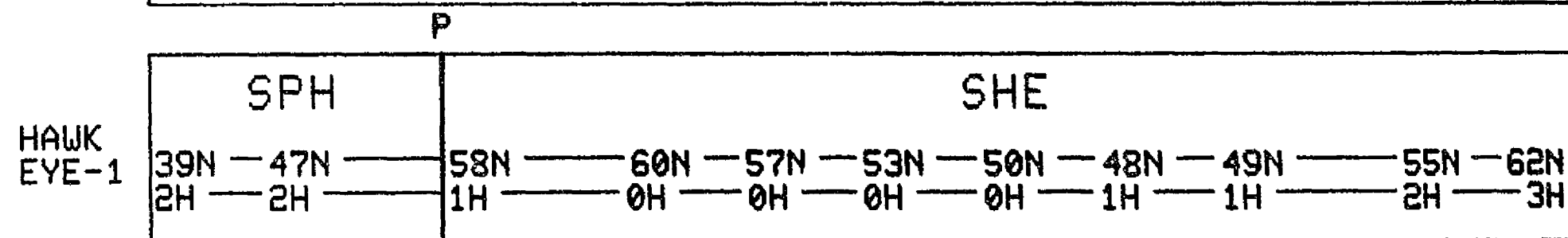
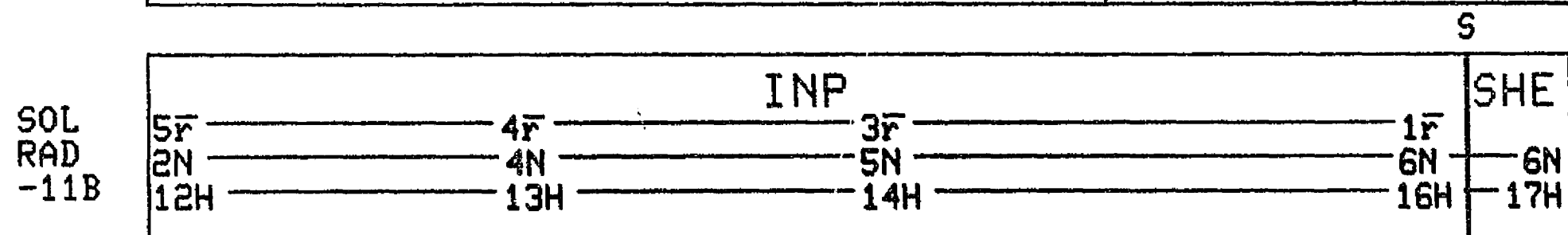
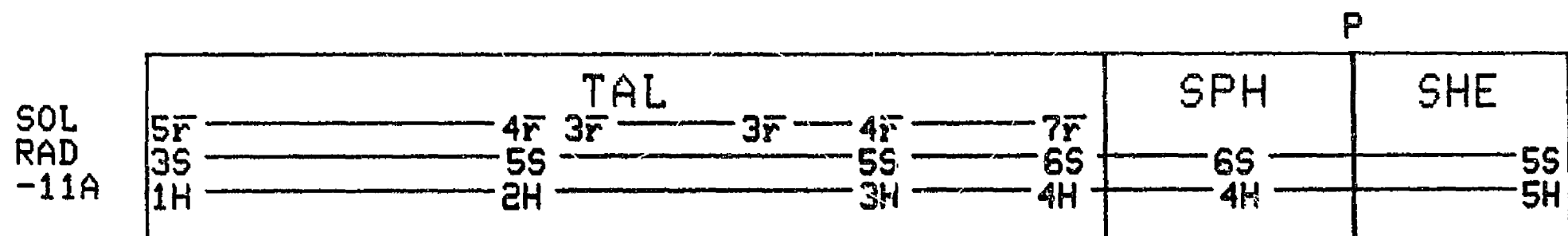
IMP-H



VELA
-5B

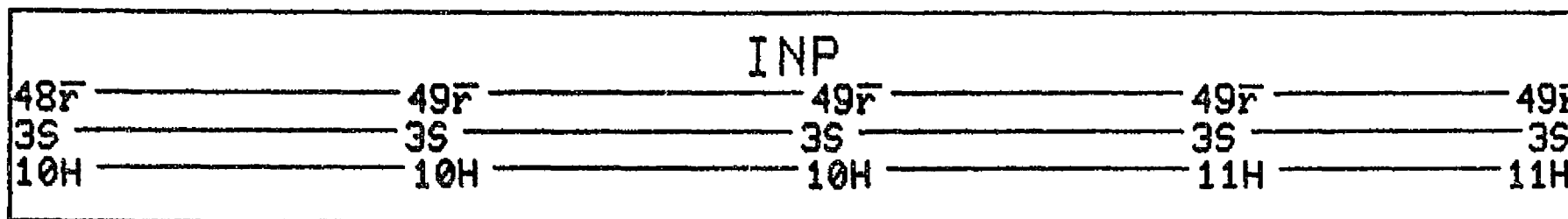


DAY 164 1977



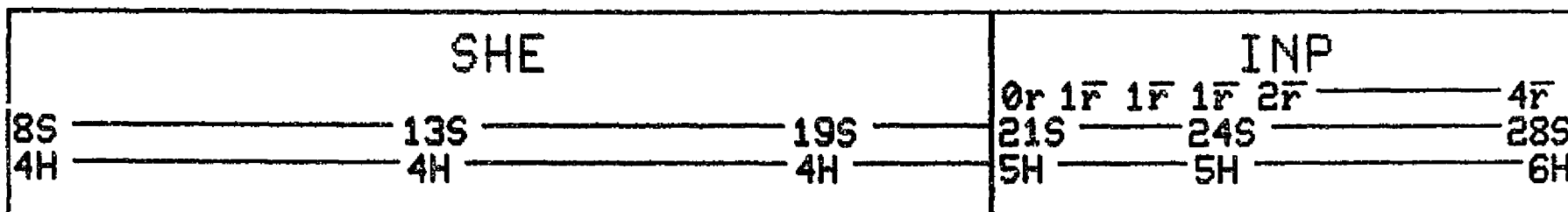
DAY 165 1977

MOON

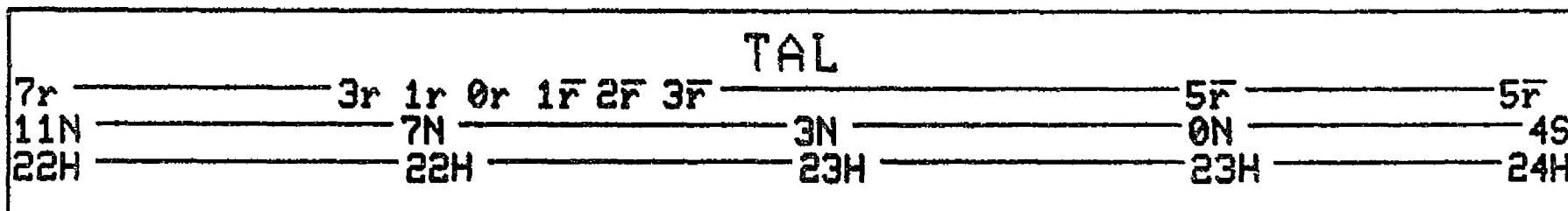


S

IMP-J

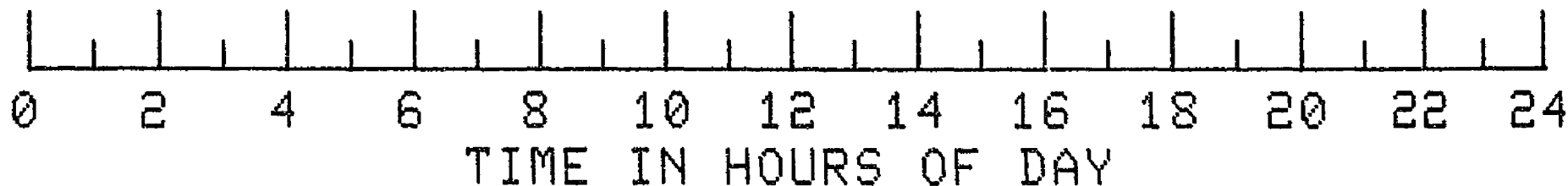
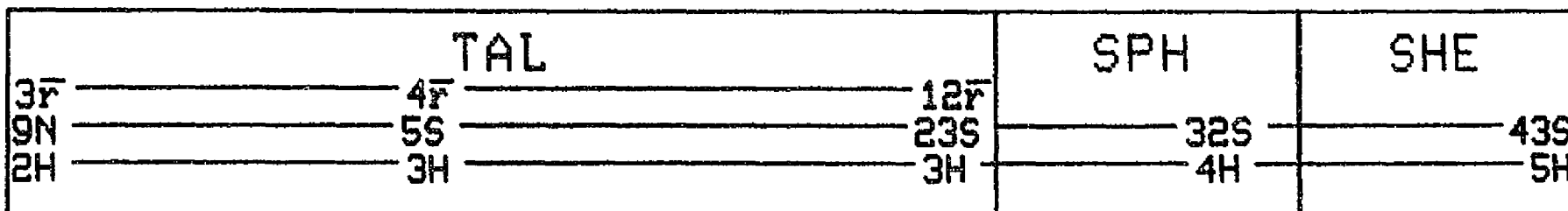


IMP-H

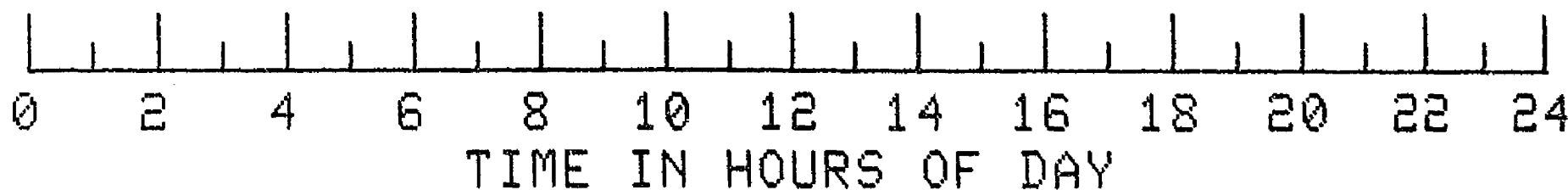
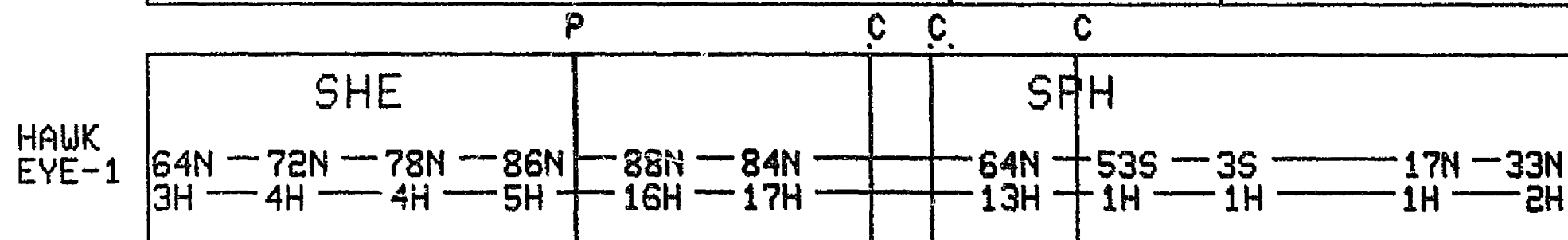
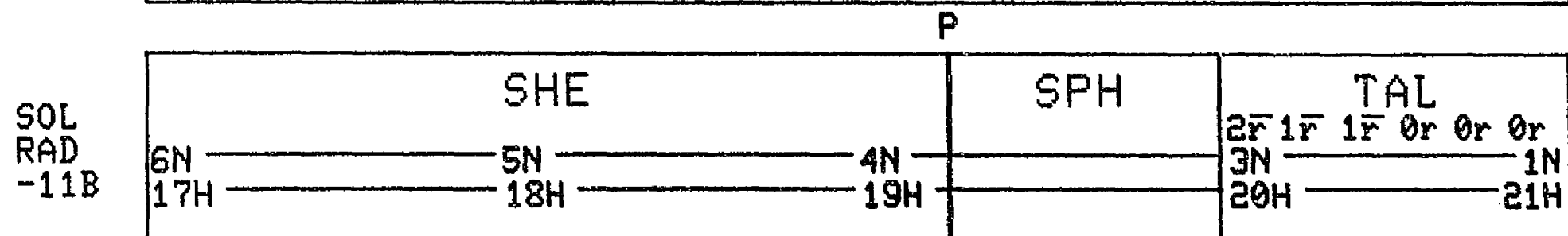
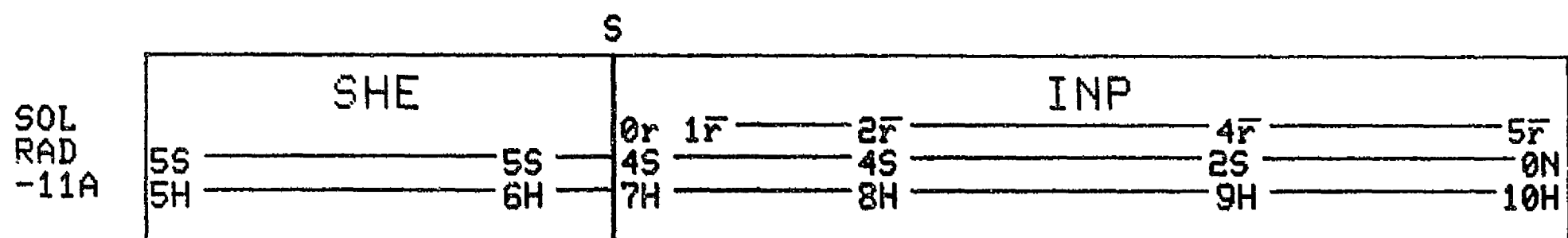


P

VELA
-5B

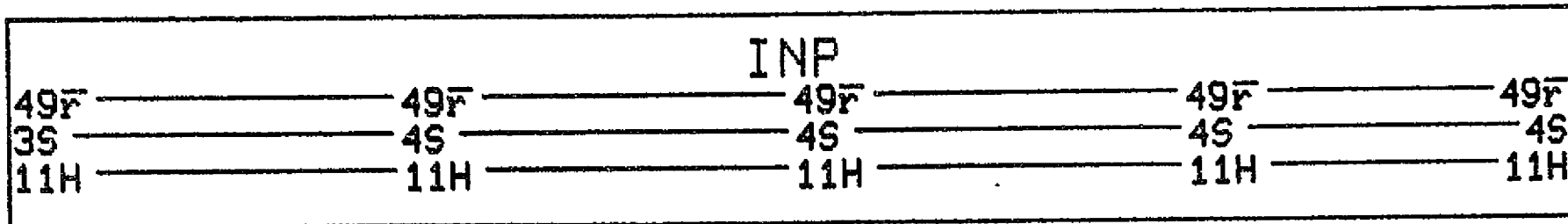


DAY 165 1977

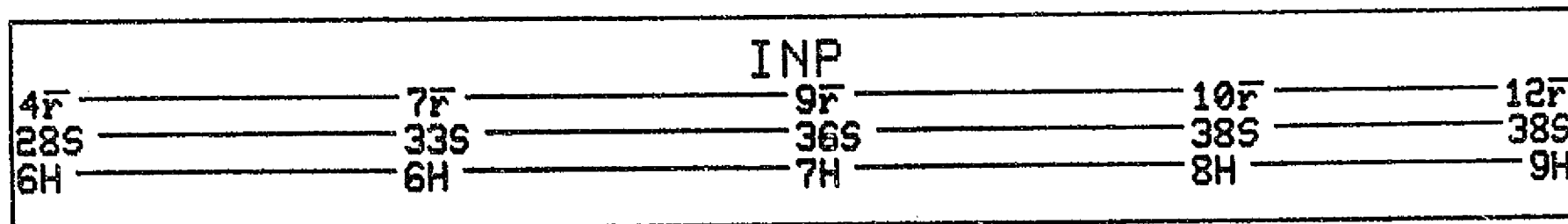


DAY 166 1977

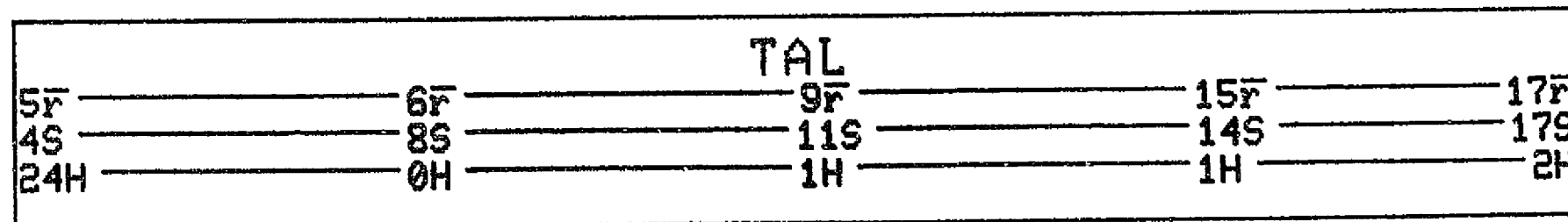
MOON



IMP-J

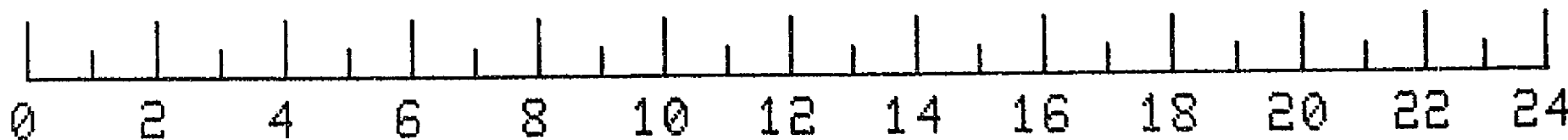
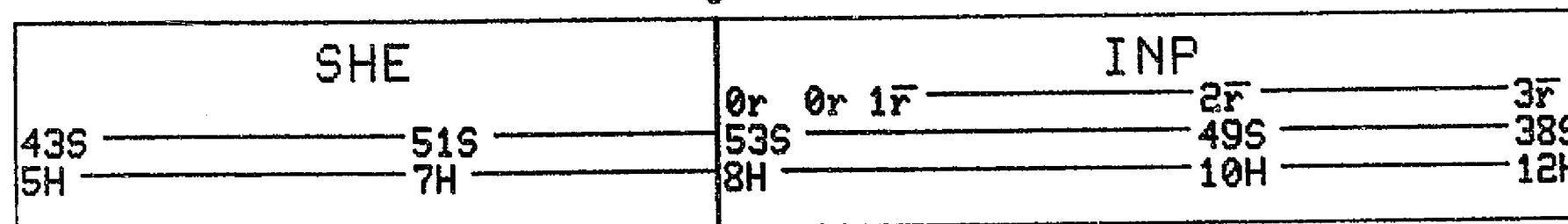


IMP-H



S

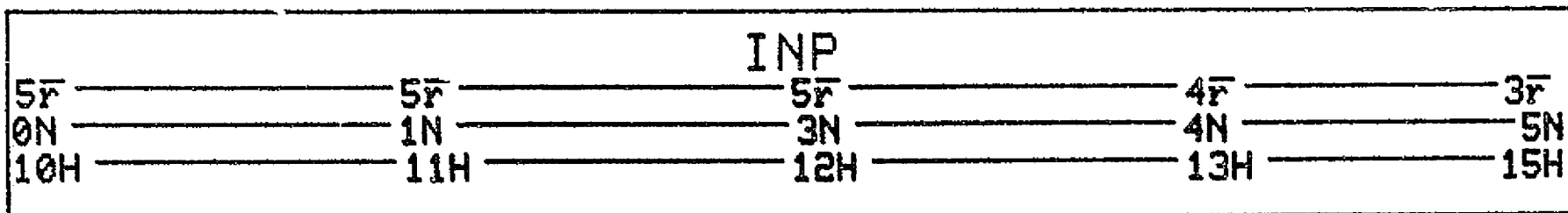
VELA
-5B



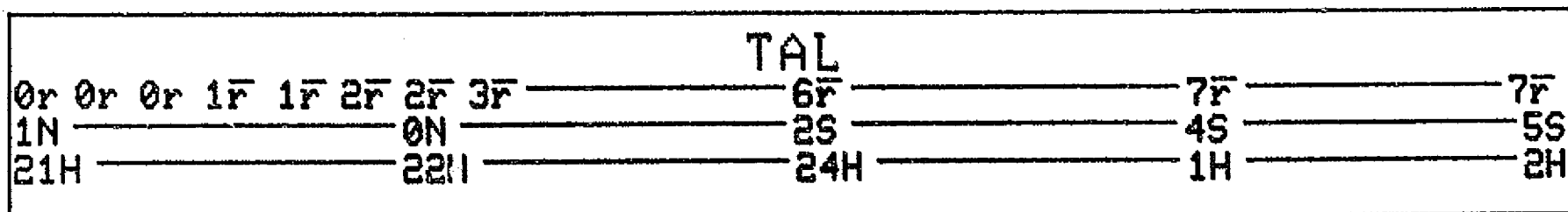
TIME IN HOURS OF DAY

DAY 166 1977

SOL
RAD
-11A

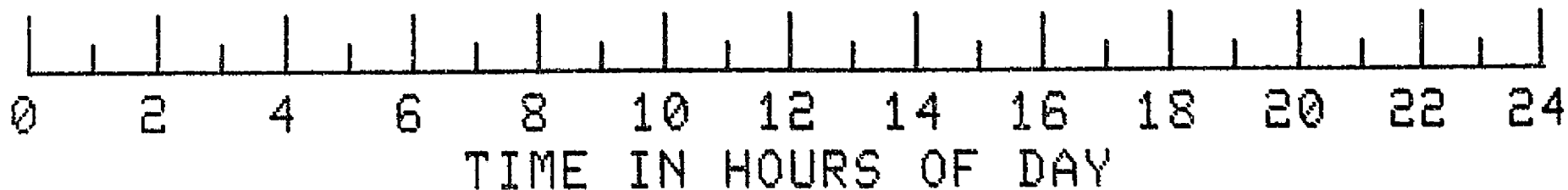
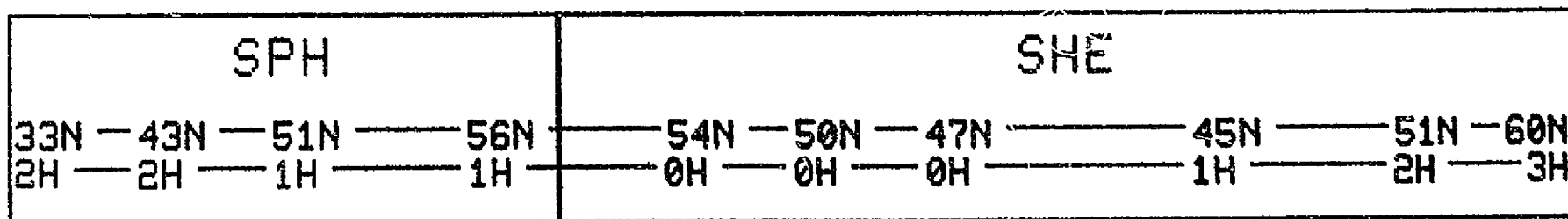


SOL
RAD
-11B



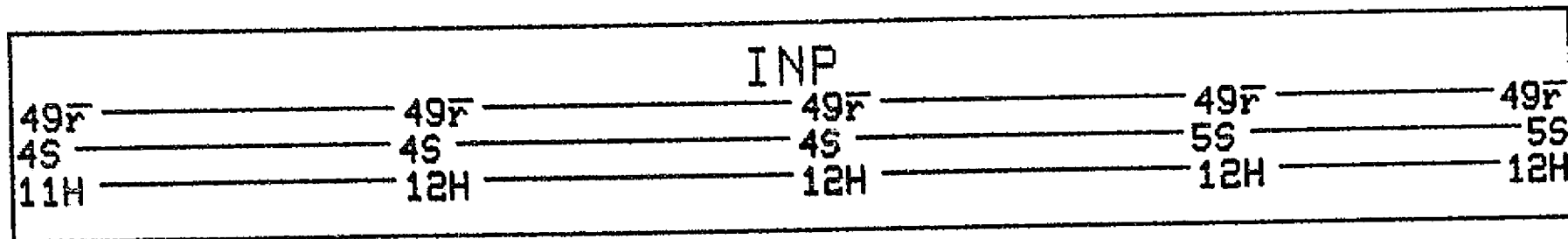
P

HAWK
EYE-1

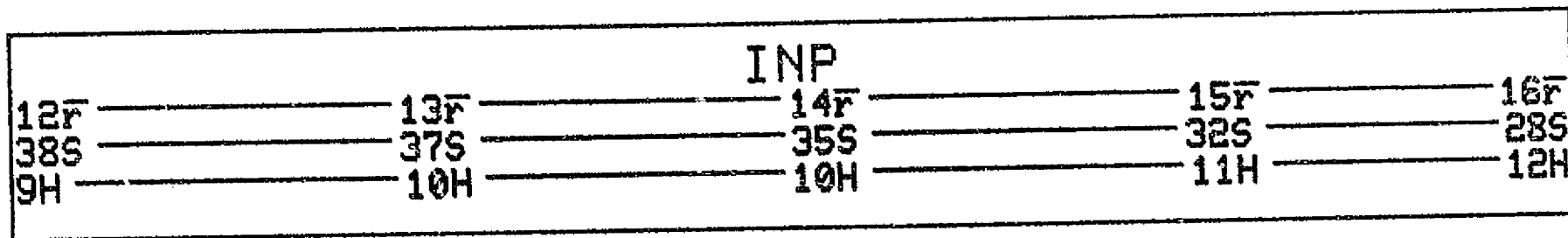


DAY 167 1977

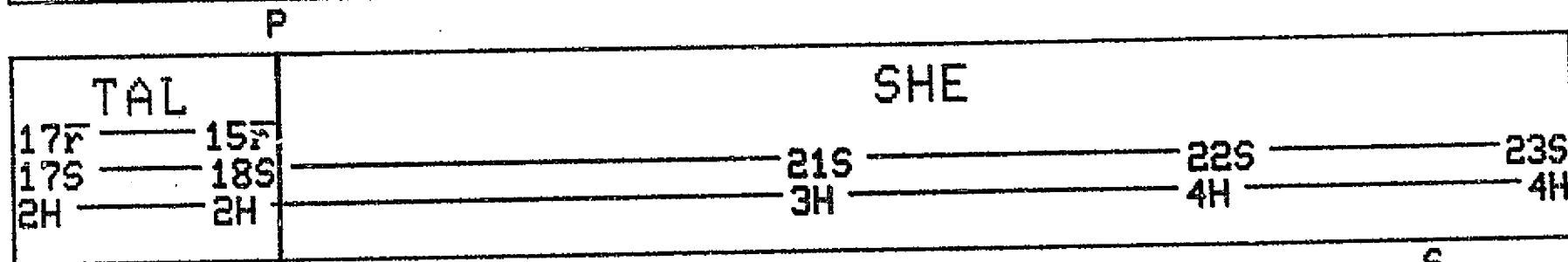
MOON



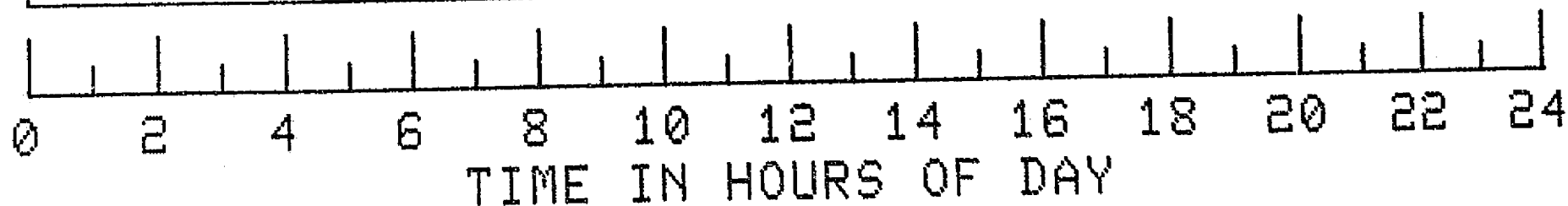
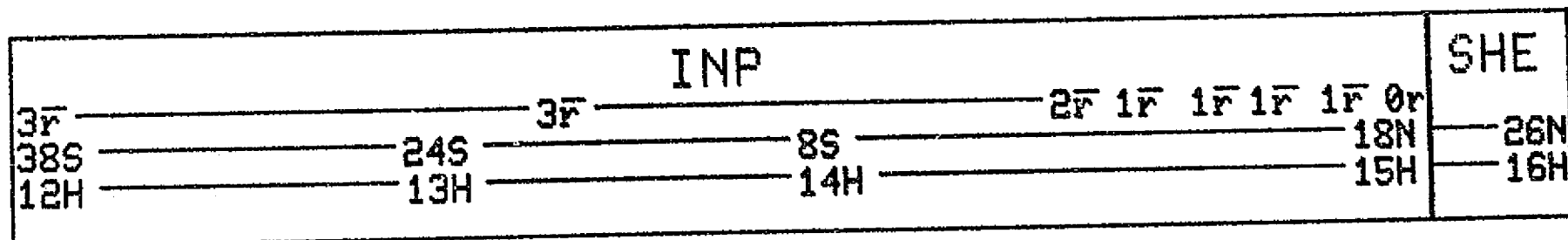
IMP-J



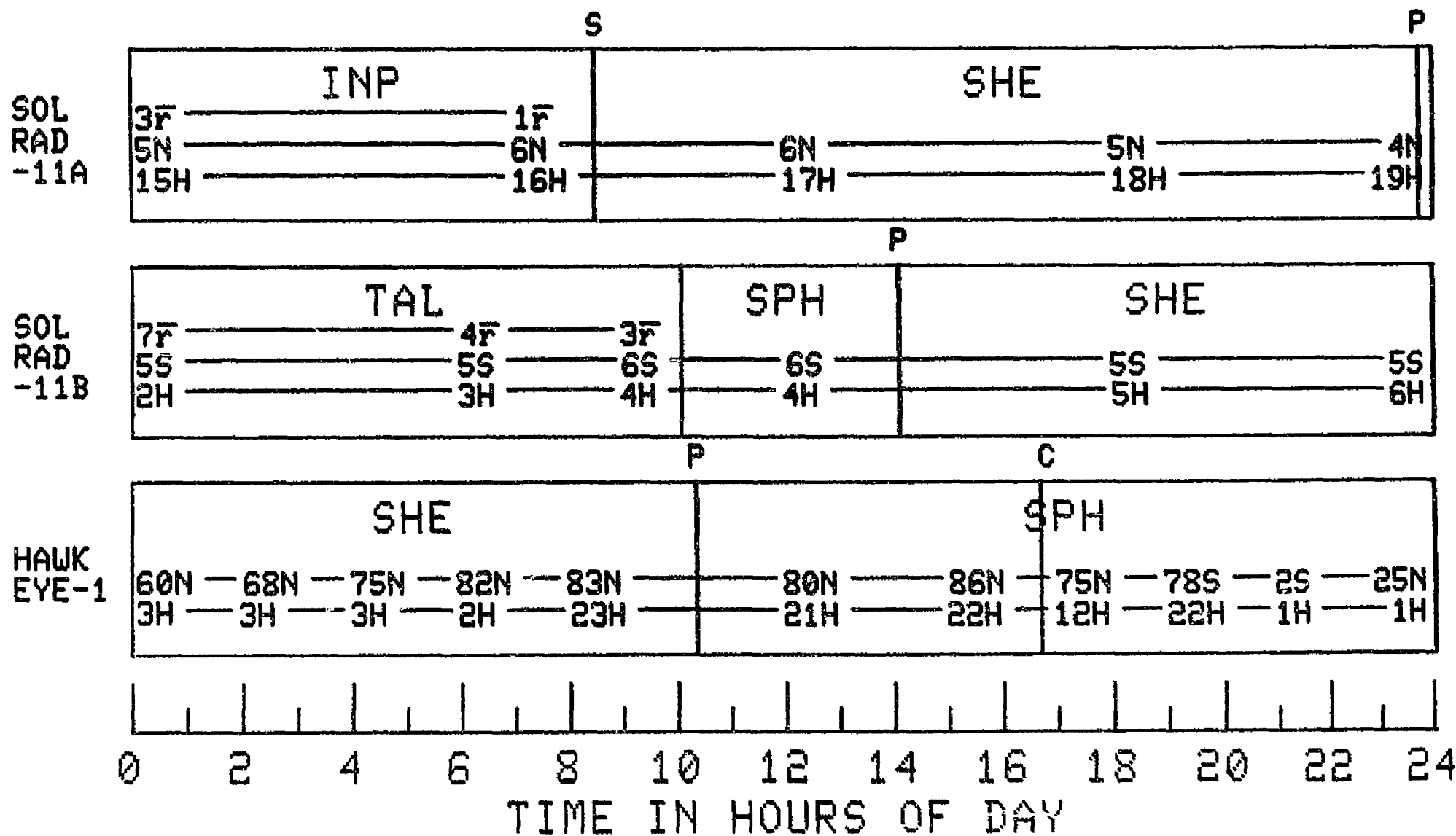
IMP-H



VELA
-5B

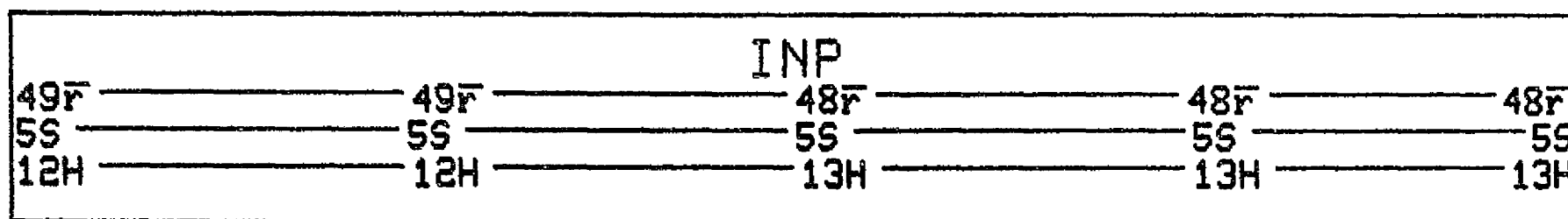


DAY 167 1977

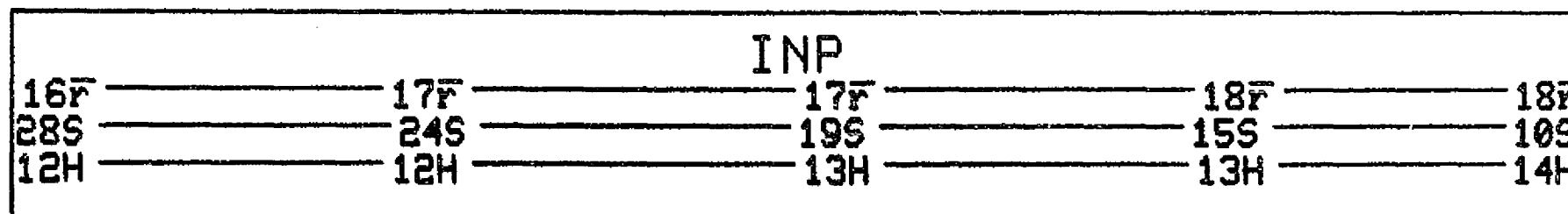


DAY 168 1977

MOON

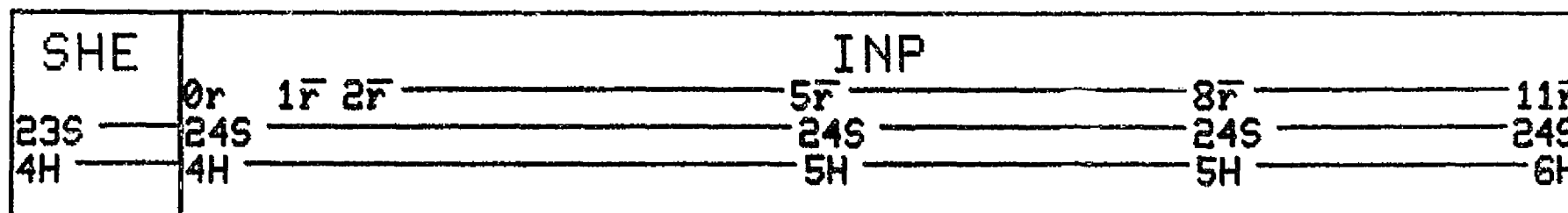


IMP-J



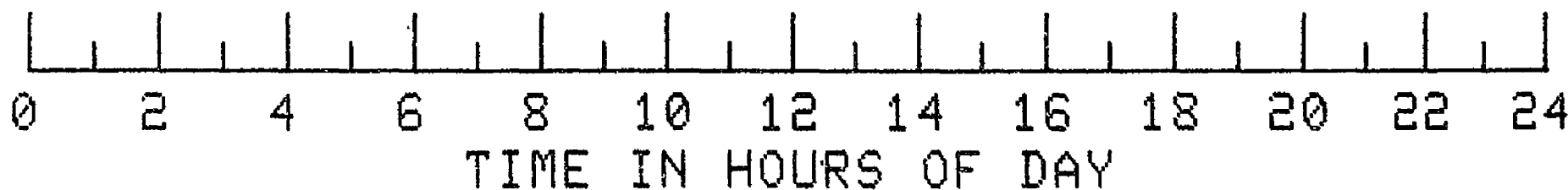
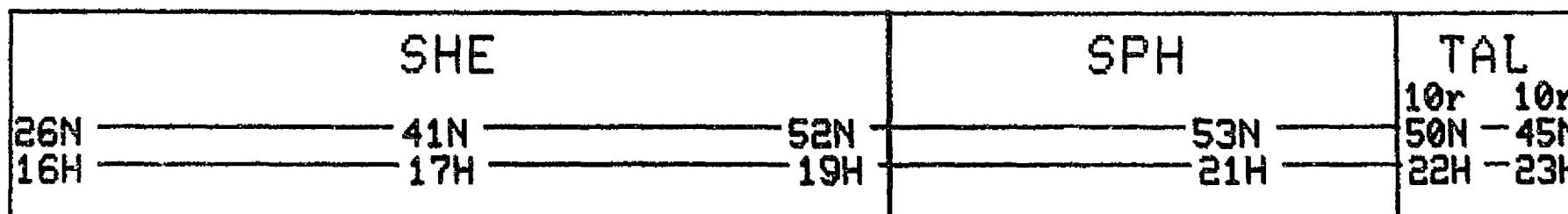
S

IMP-H

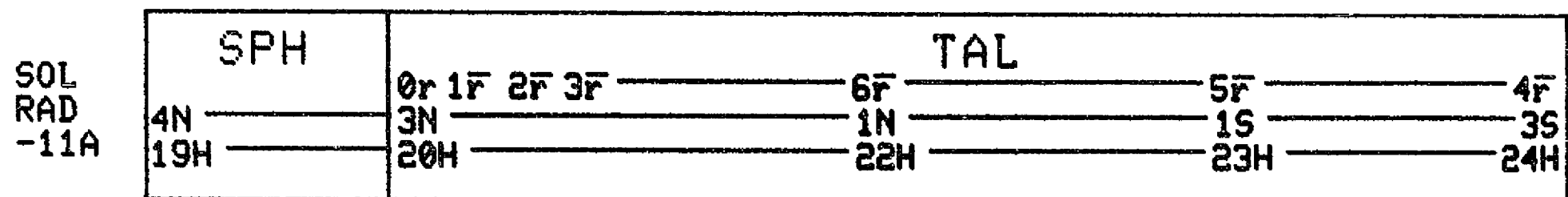


P

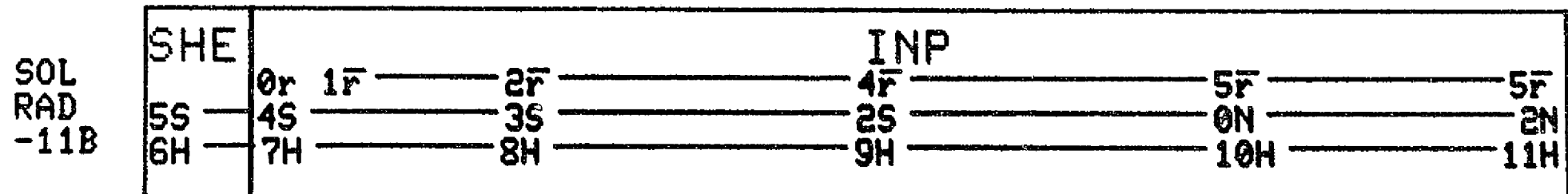
VELA
-5B



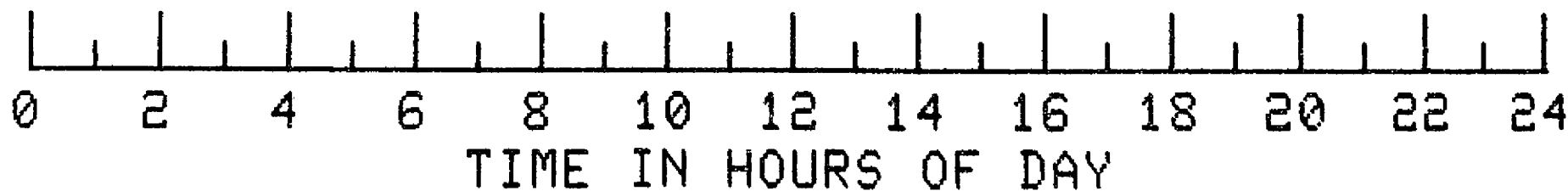
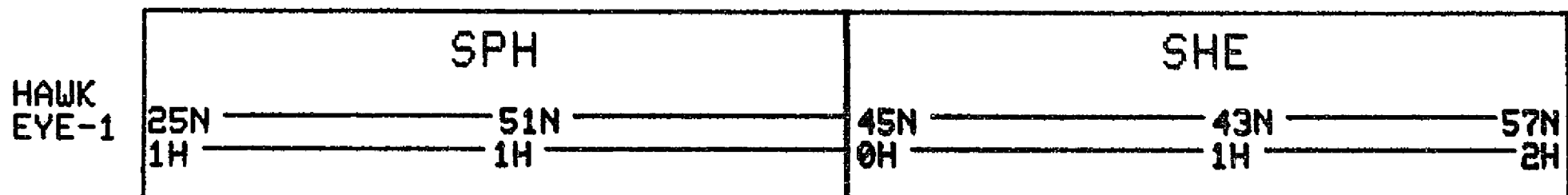
DAY 168 1977



S

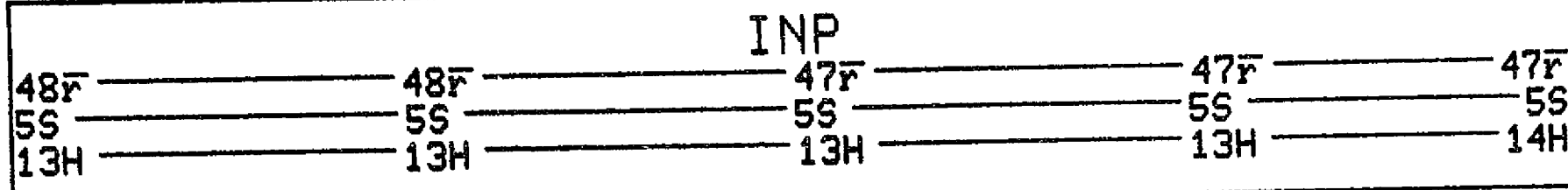


P

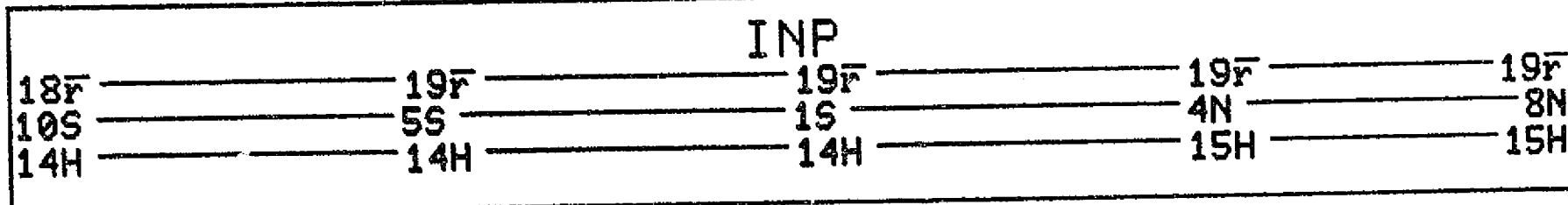


DAY 169 1977

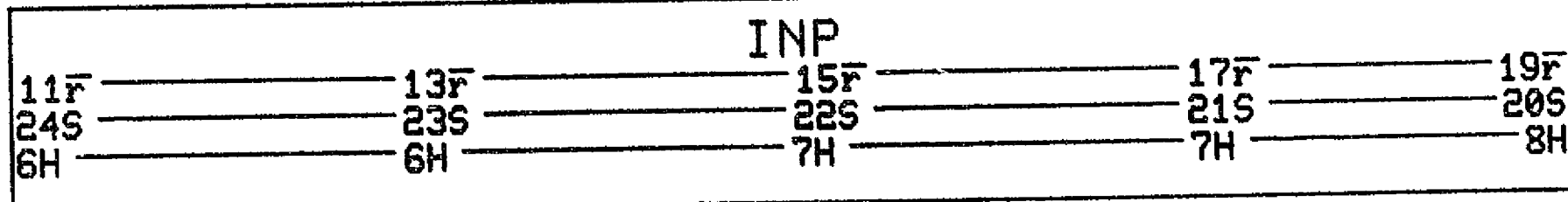
MOON



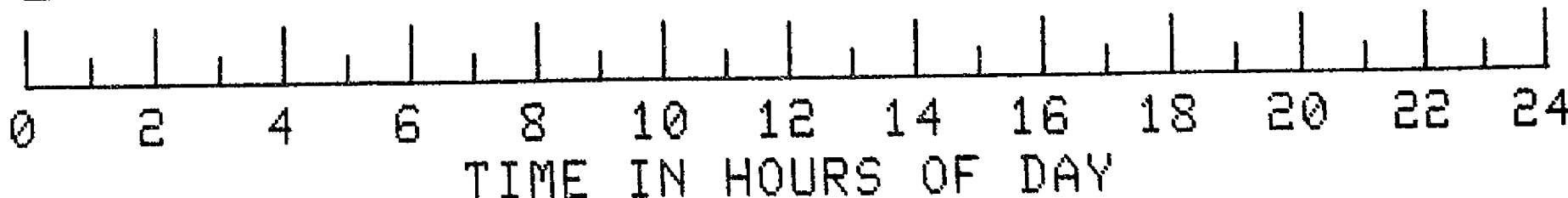
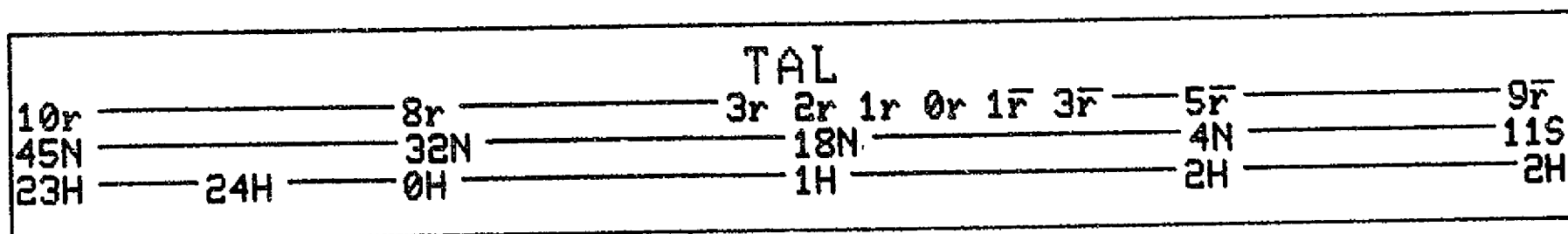
IMP-J



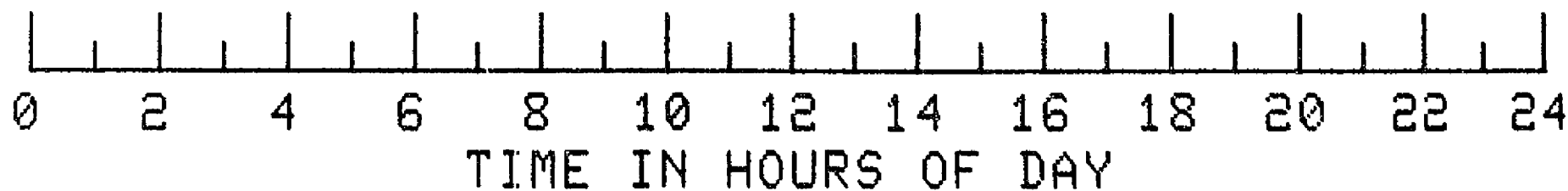
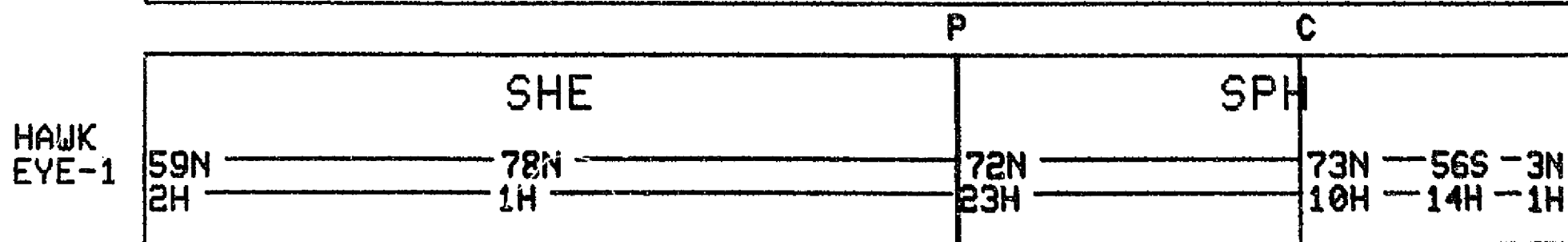
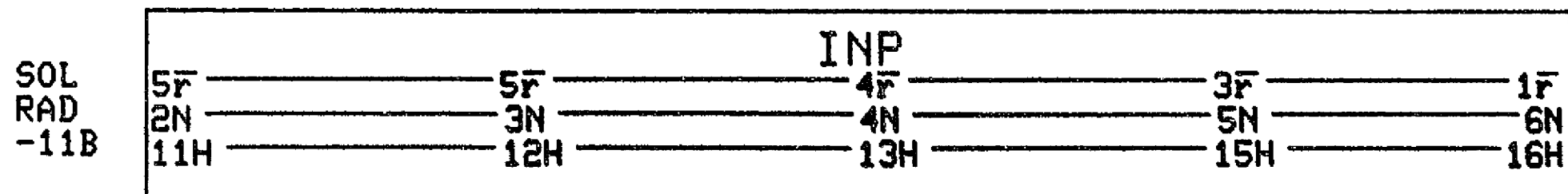
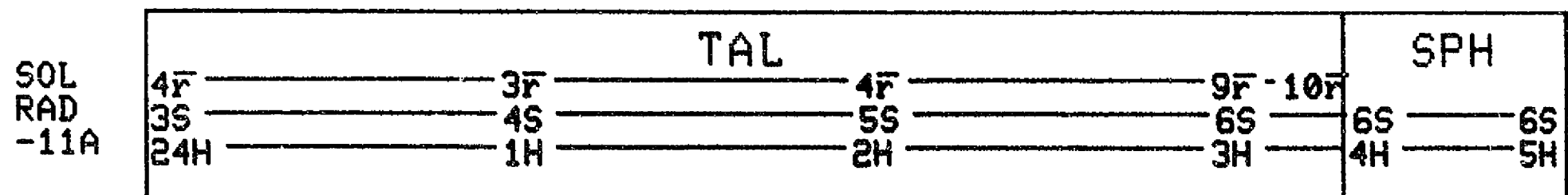
IMP-H



VELA
-5B

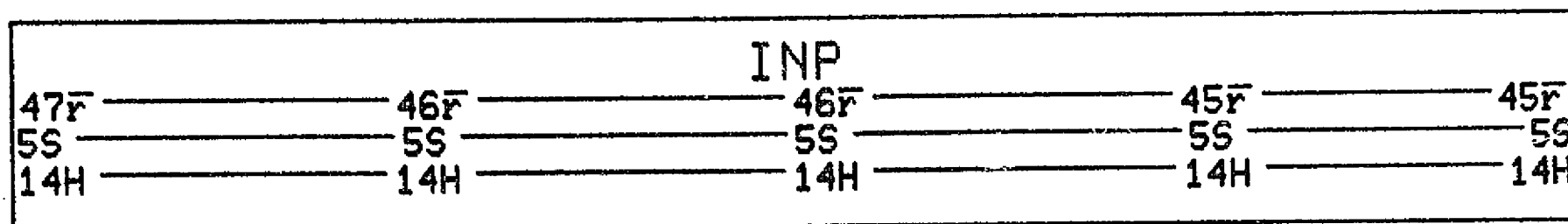


DAY 169 1977

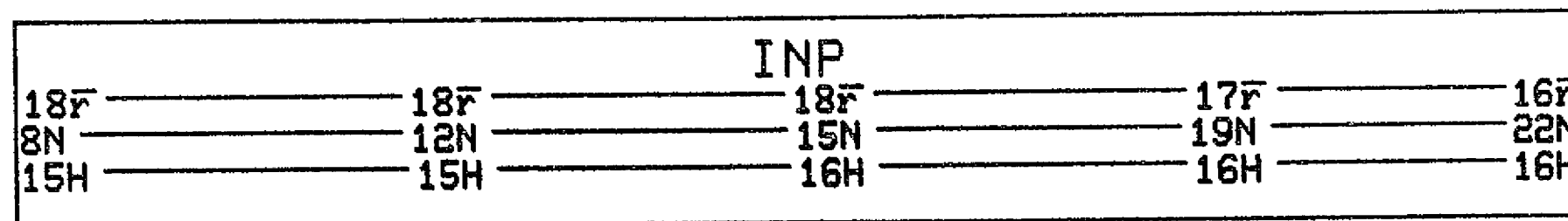


DAY 170 1977

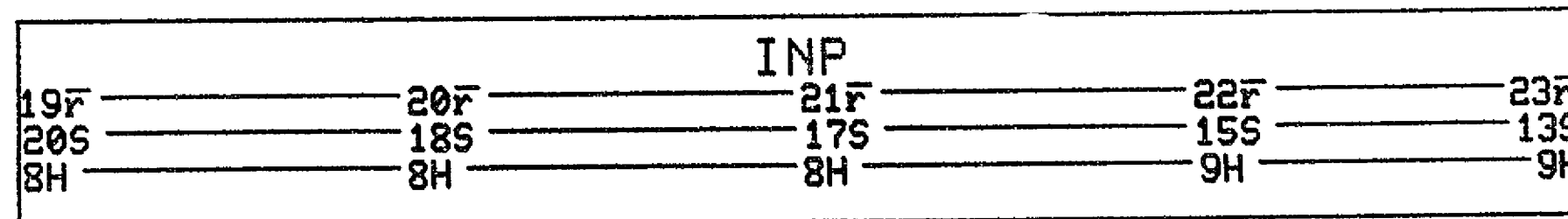
MOON



IMP-J

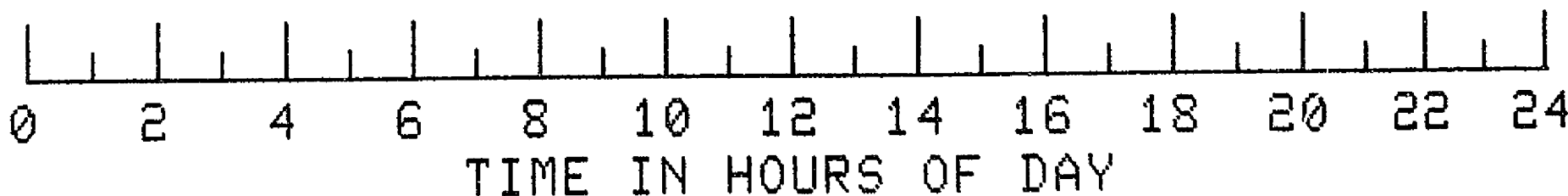
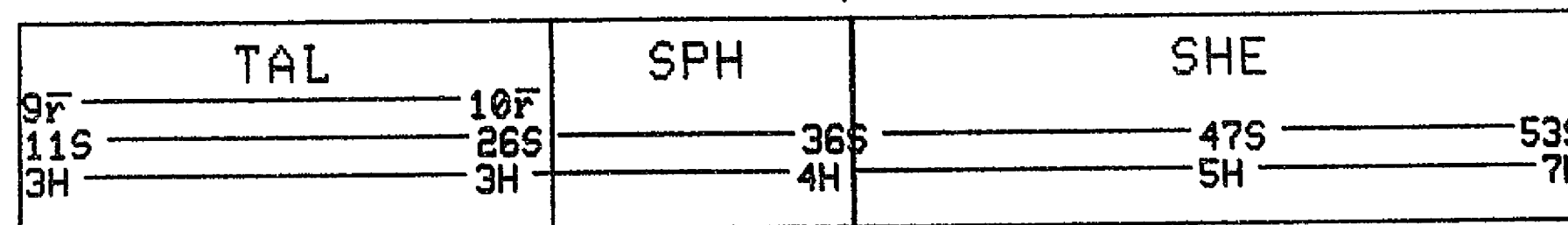


IMP-H

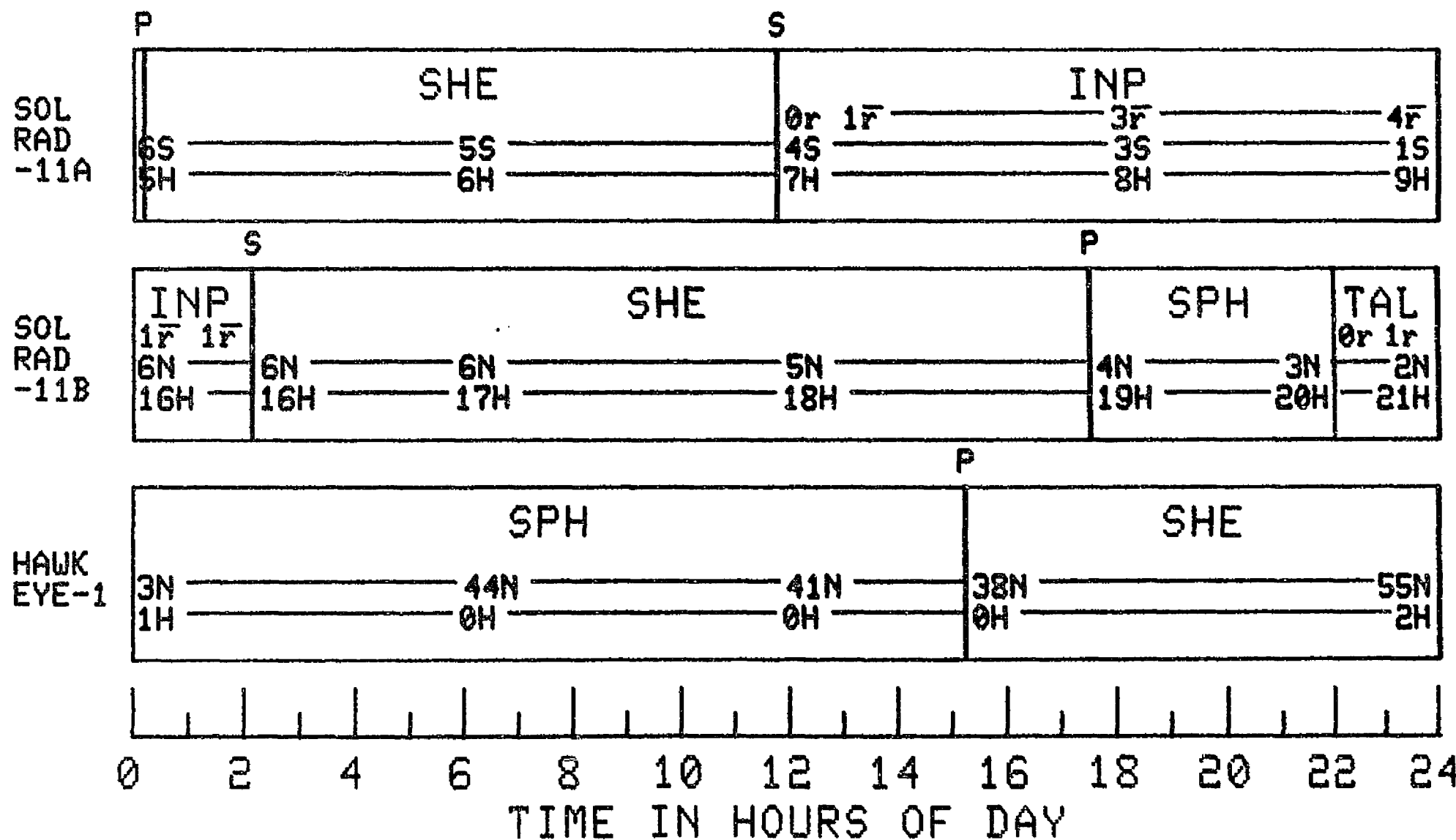


P

VELA
-5B

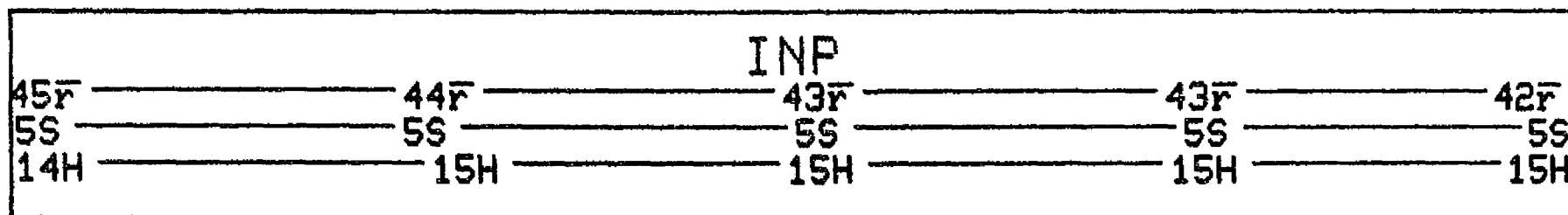


DAY 170 1977

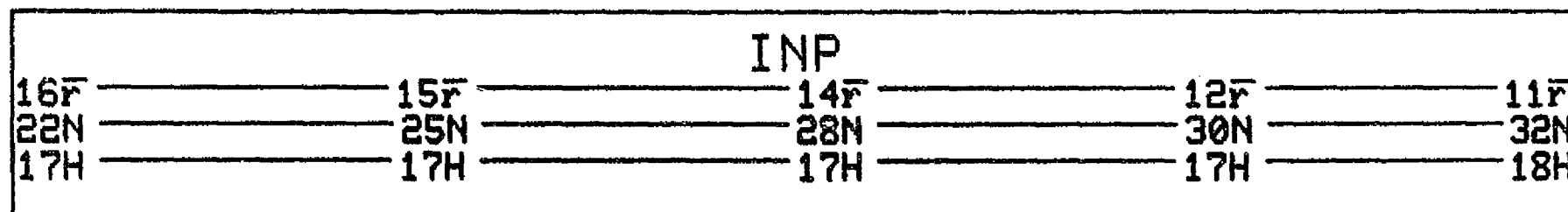


DAY 171 1977

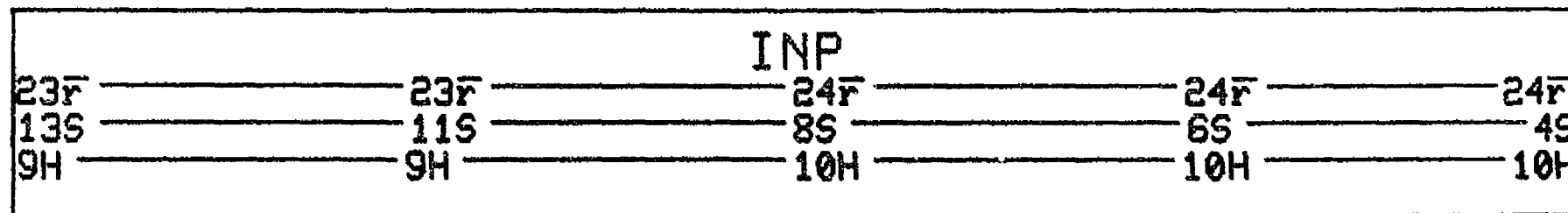
MOON



IMP-J

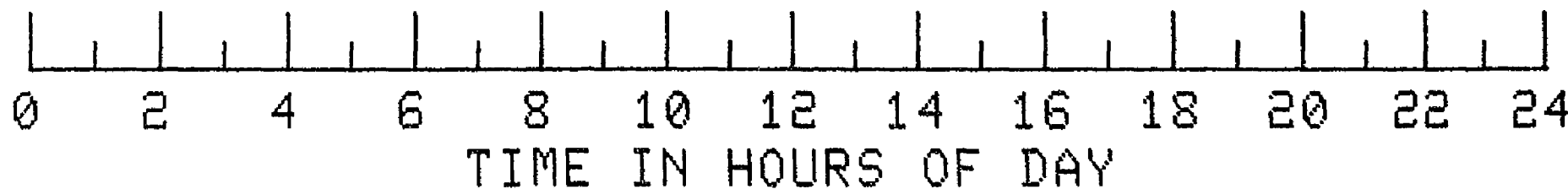
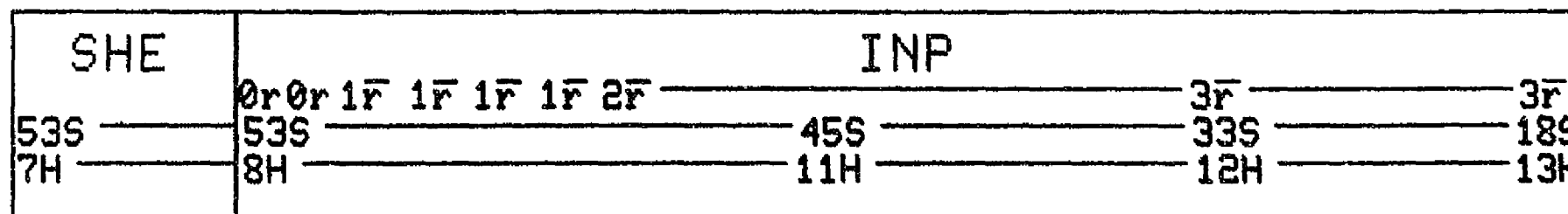


IMP-H



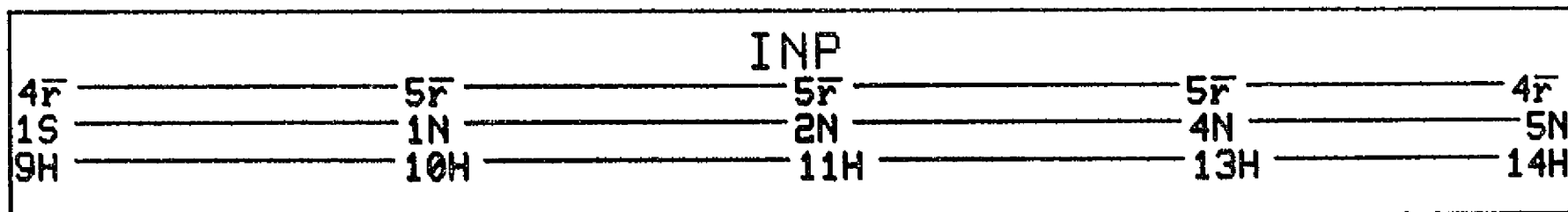
S

VELA
-5B

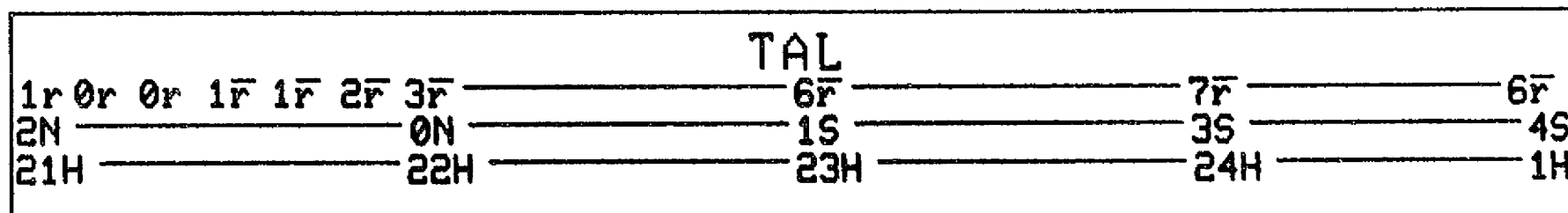


DAY 171 1977

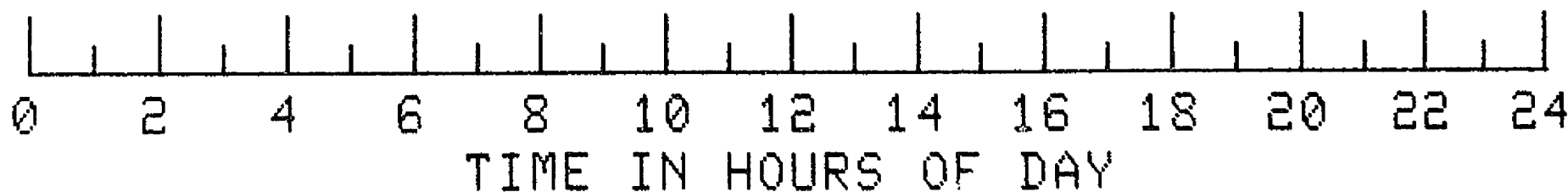
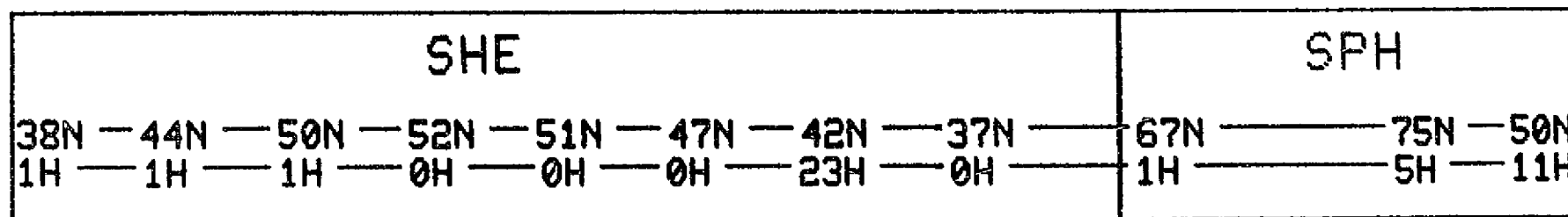
SOL
RAD
-11A



SOL
RAD
-11B

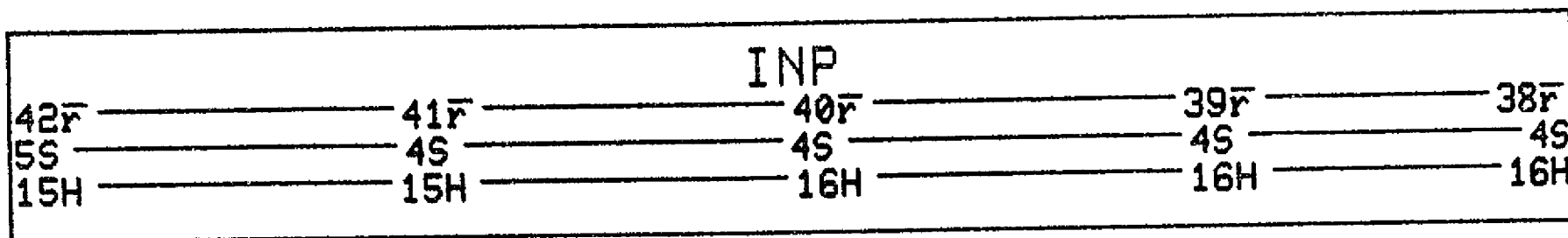


HAWK
EYE-1

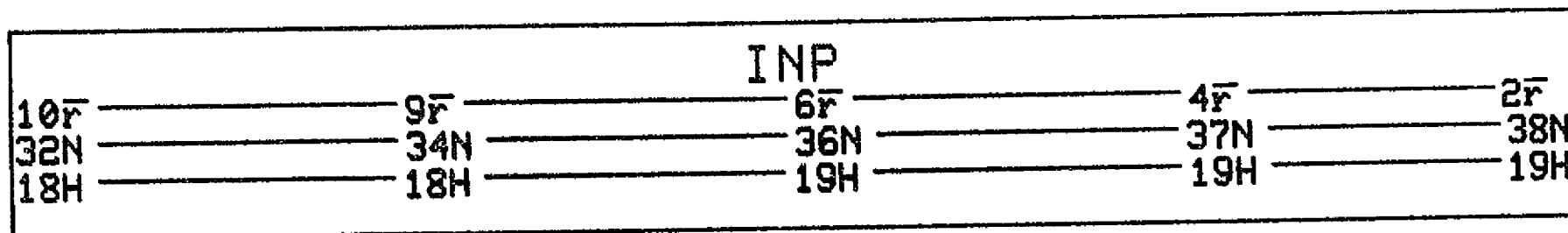


DAY 172 1977

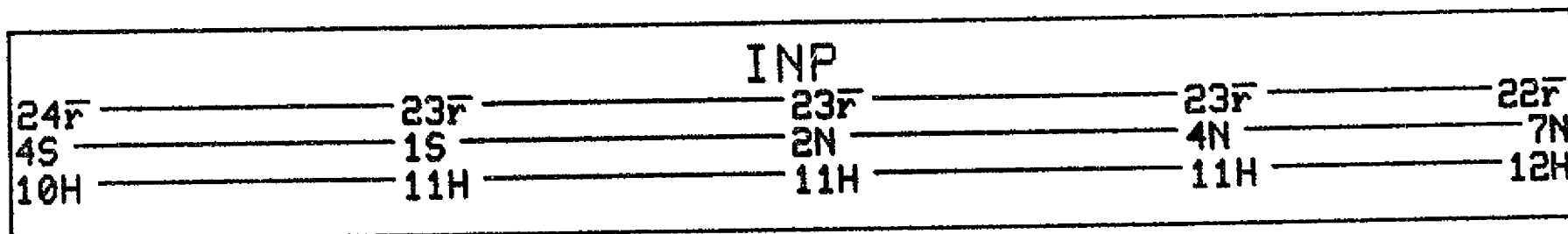
MOON



IMP-J

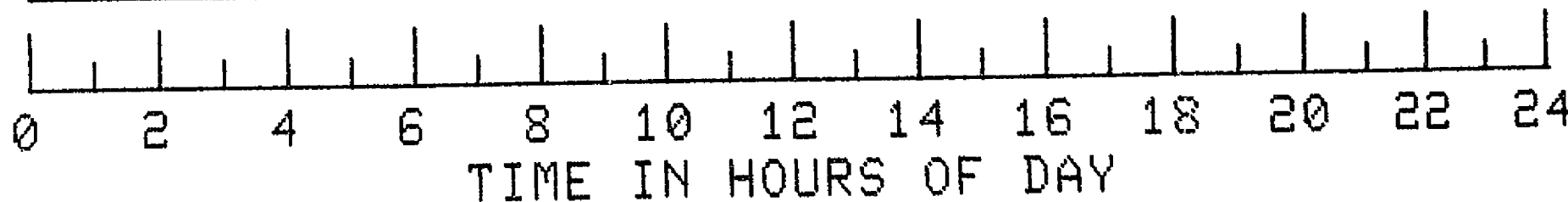
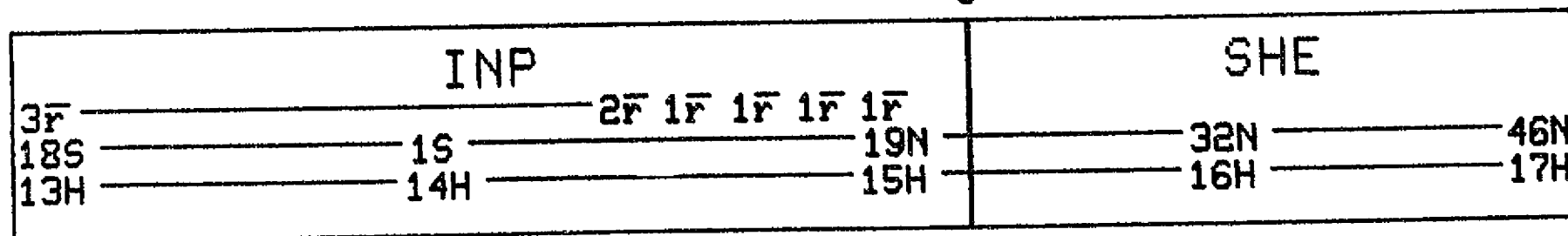


IMP-H

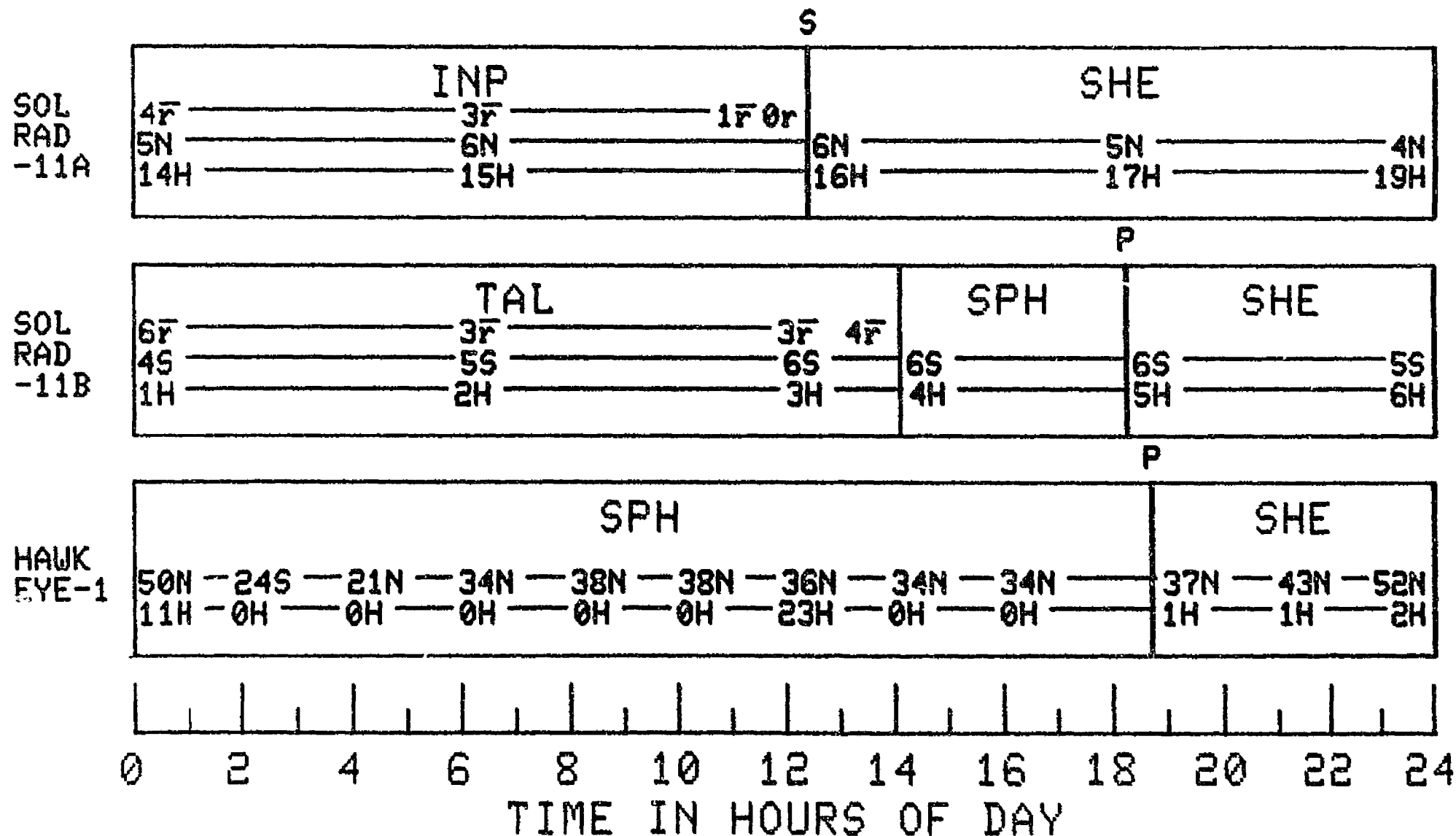


S

VELA
-5B

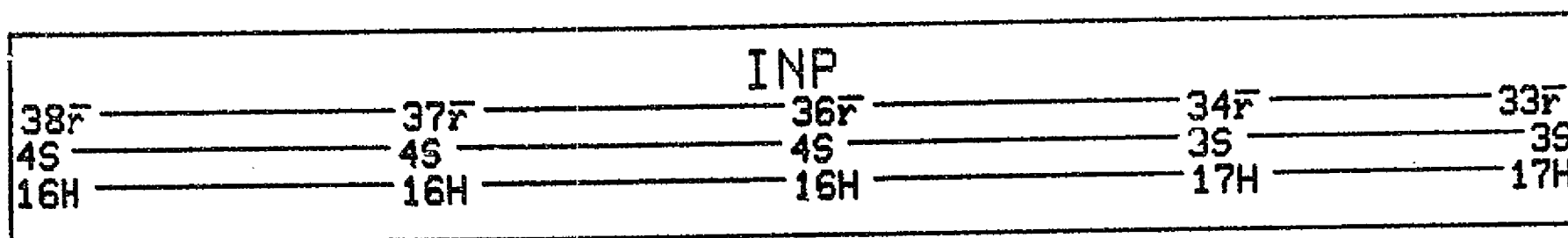


DAY 172 1977



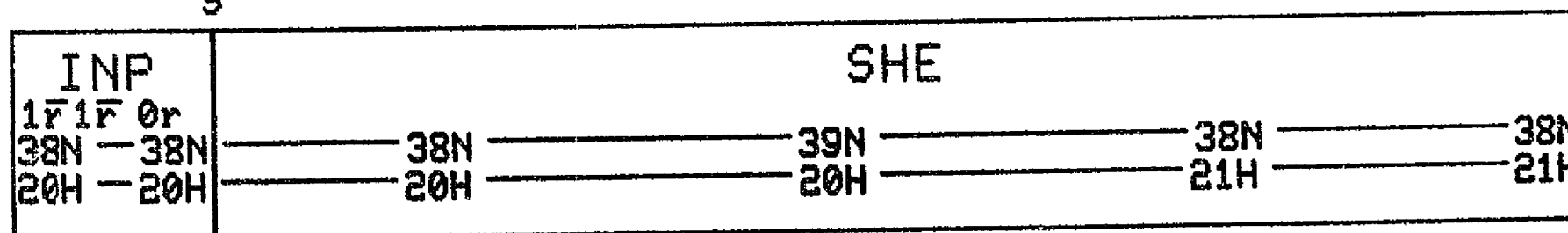
DAY 173 1977

MOON

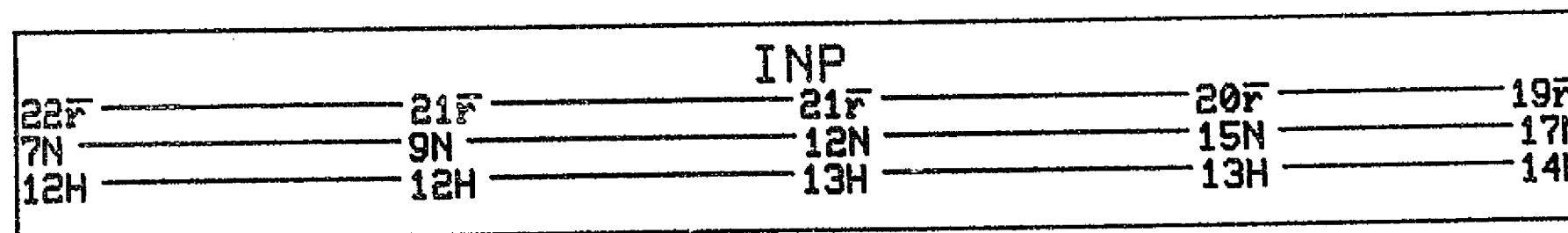


S

IMP-J

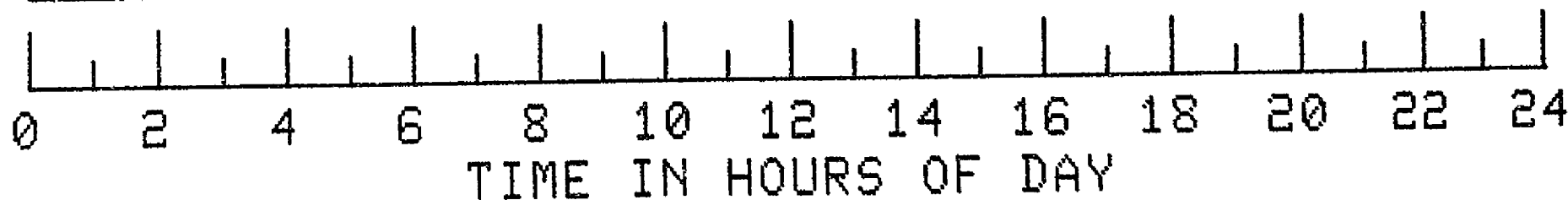
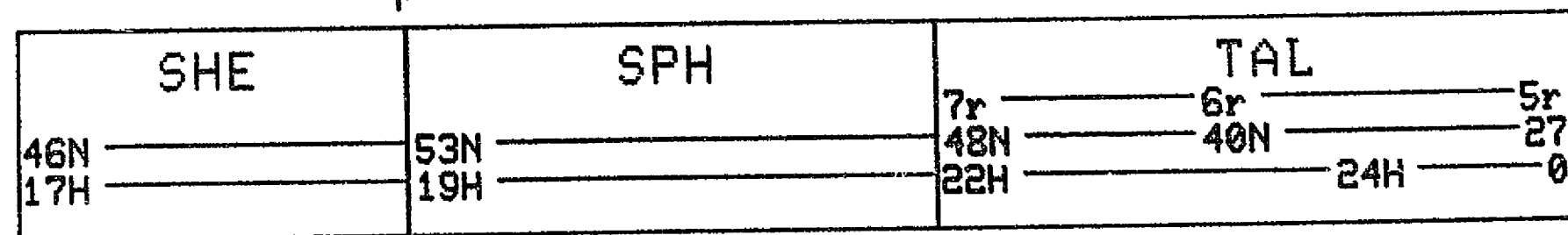


IMP-H

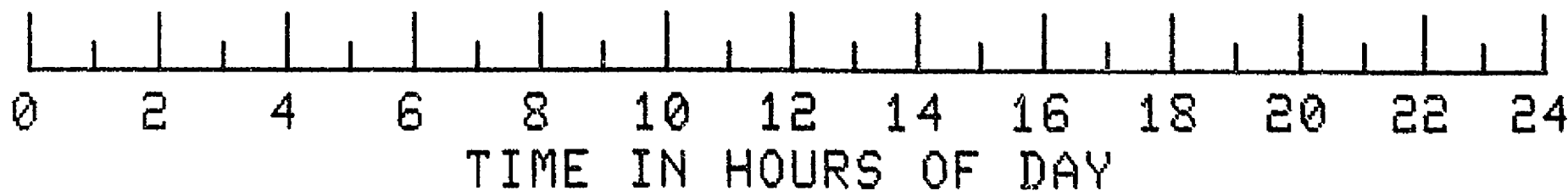
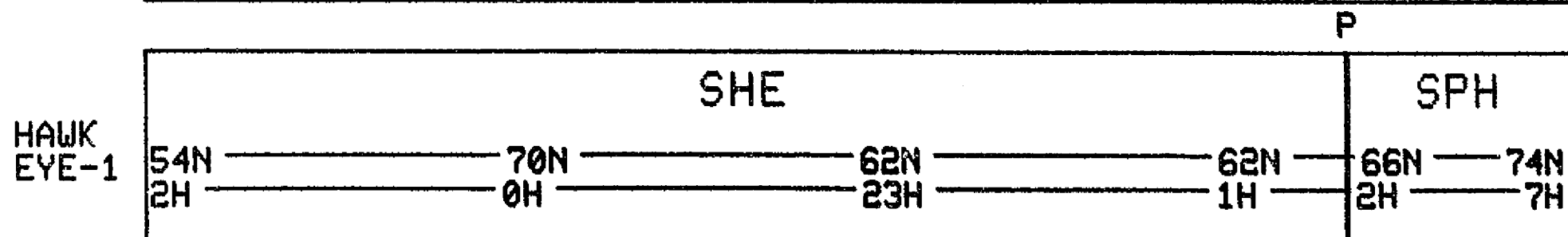
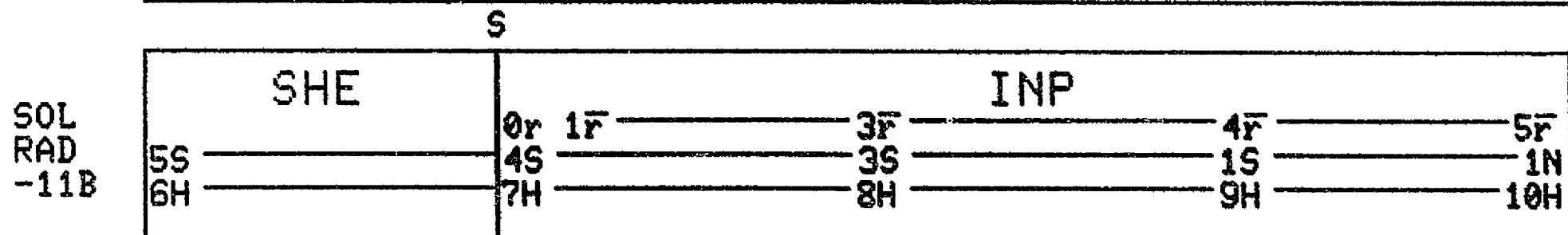
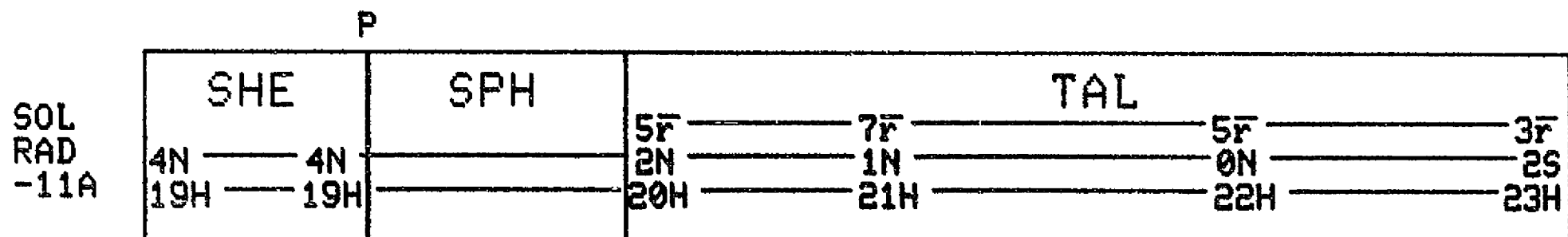


P

VELA
-5B

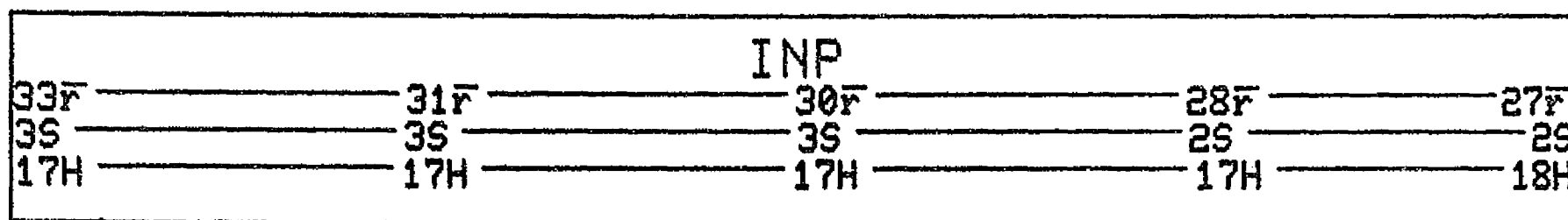


DAY 173 1977



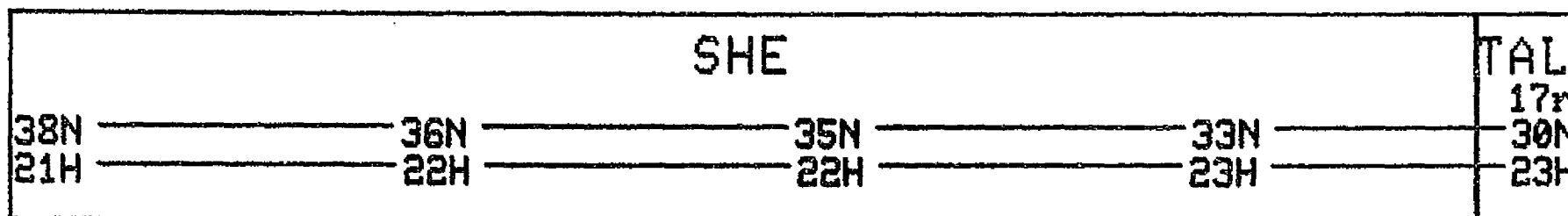
DAY 174 1977

MOON

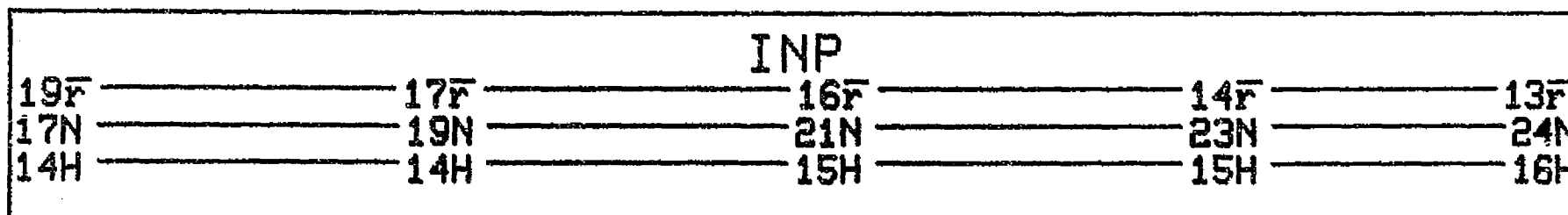


P

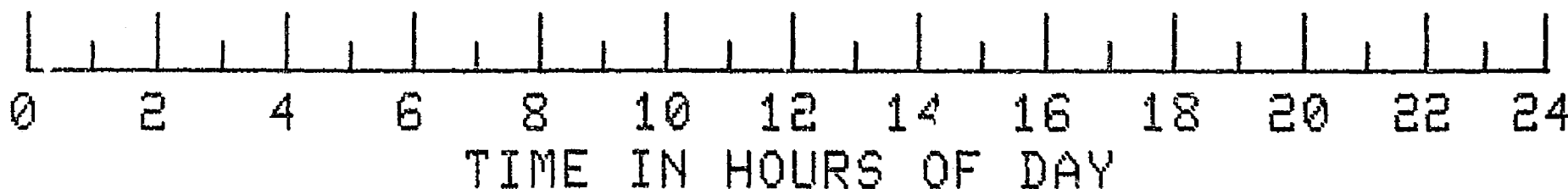
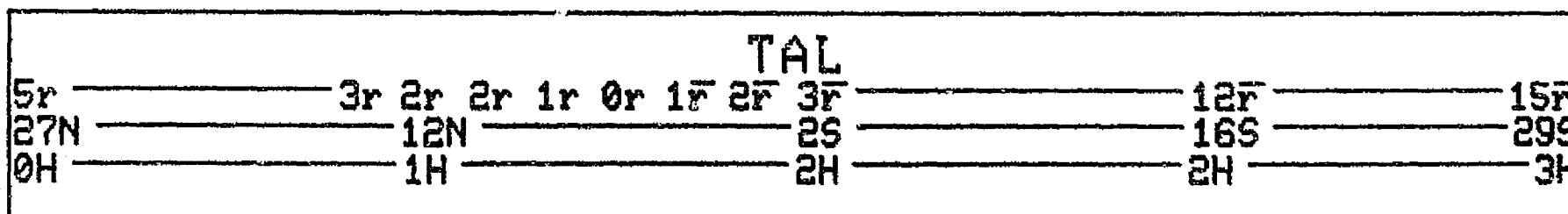
IMP-J



IMP-H

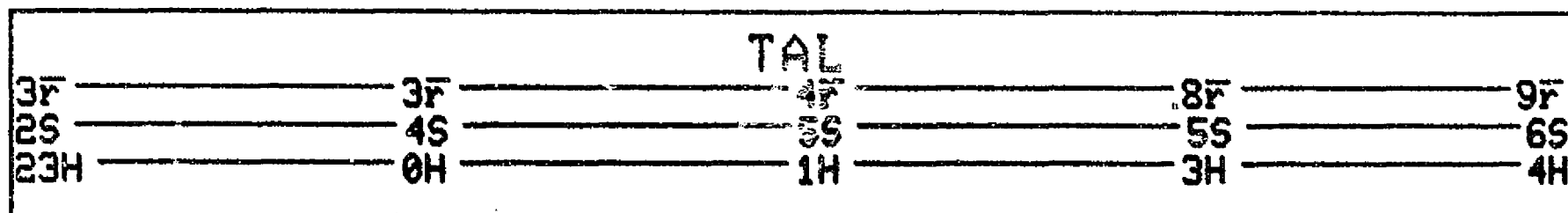


VELA
-5B

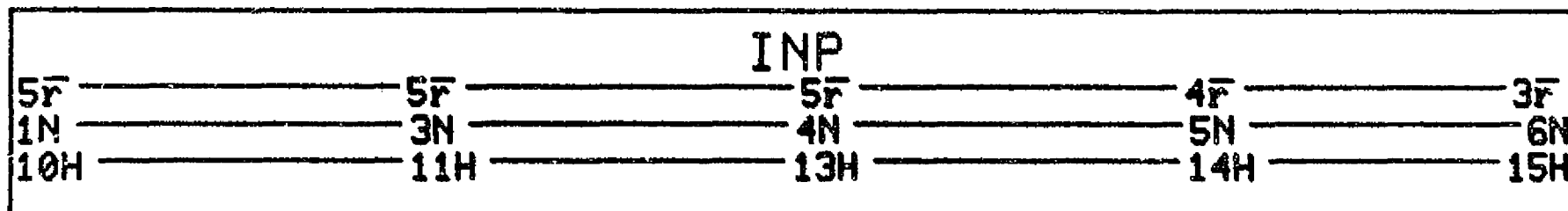


DAY 174 1977

SOL
RAD
-11A



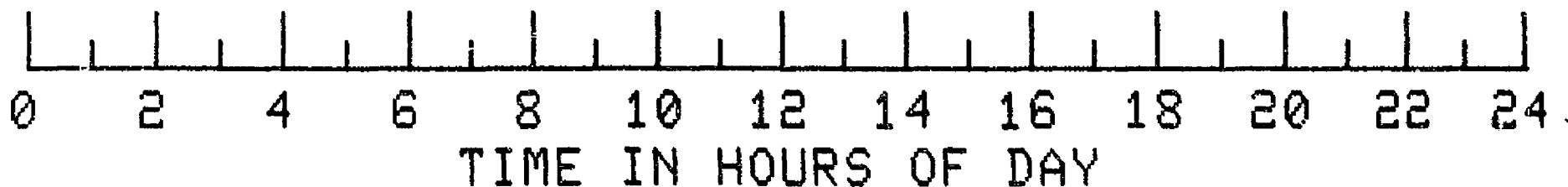
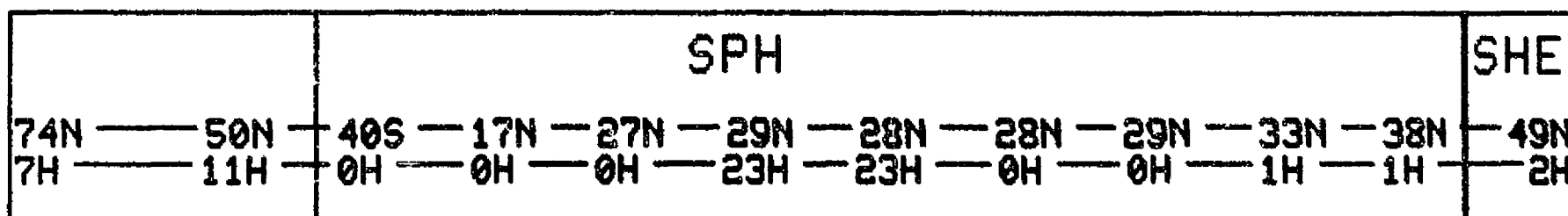
SOL
RAD
-11B



C

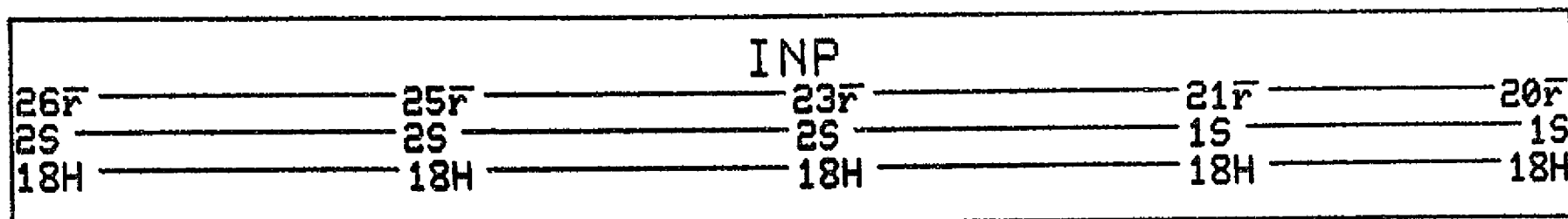
P

HAWK
EYE-1

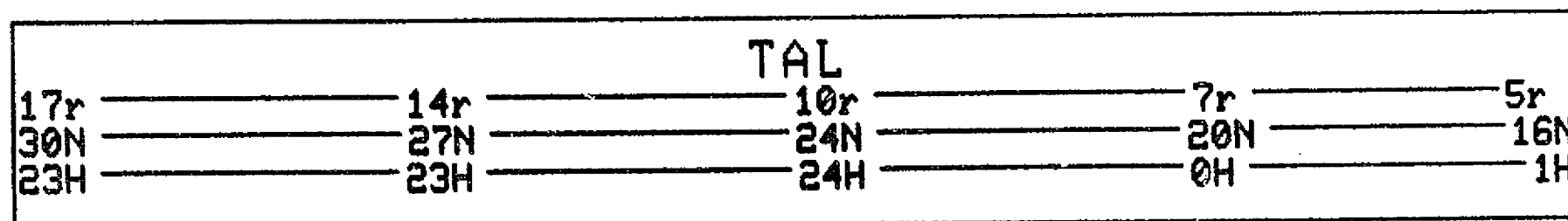


DAY 175 1977

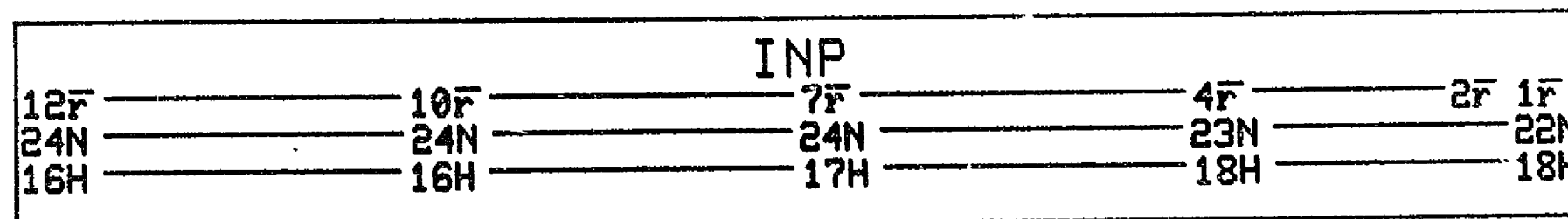
MOON



IMP-J



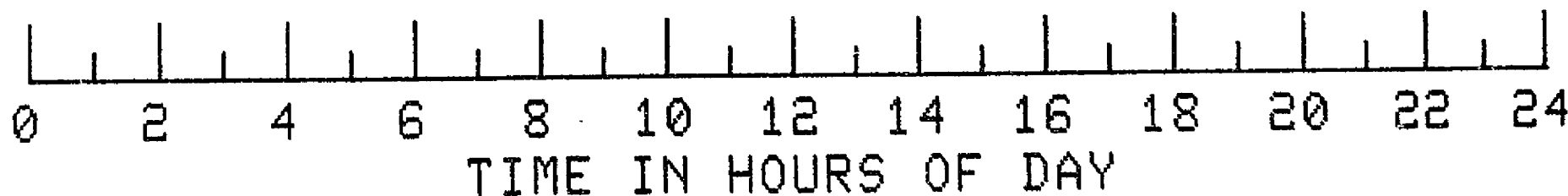
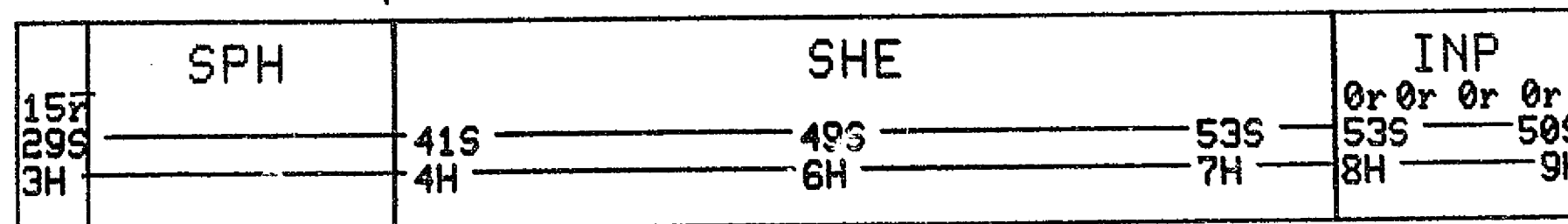
IMP-H



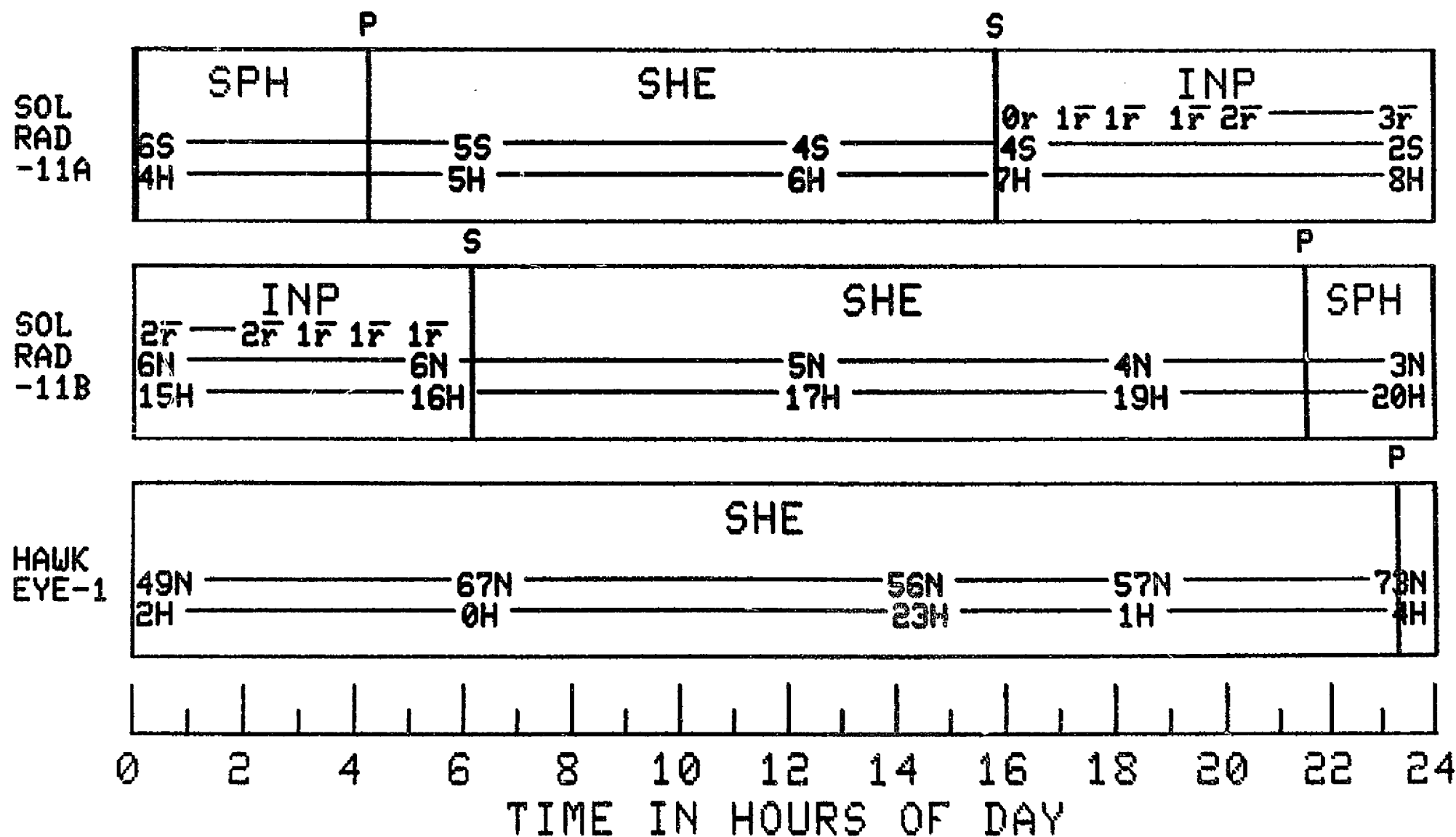
P

S

VELA
-5B

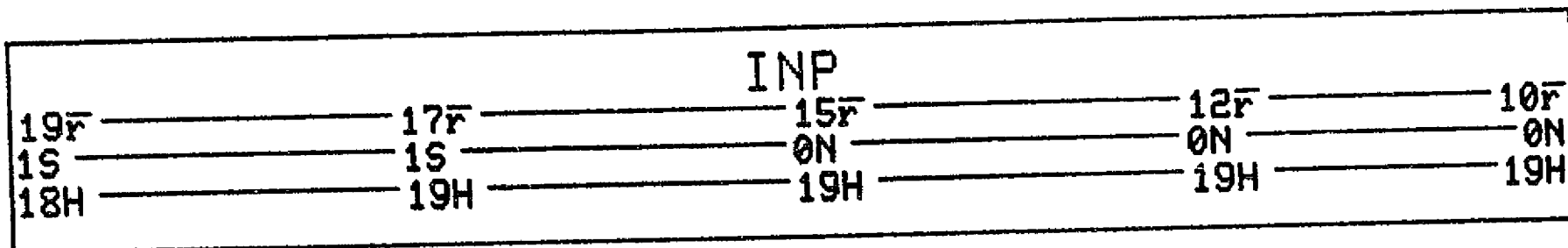


DAY 175 1977

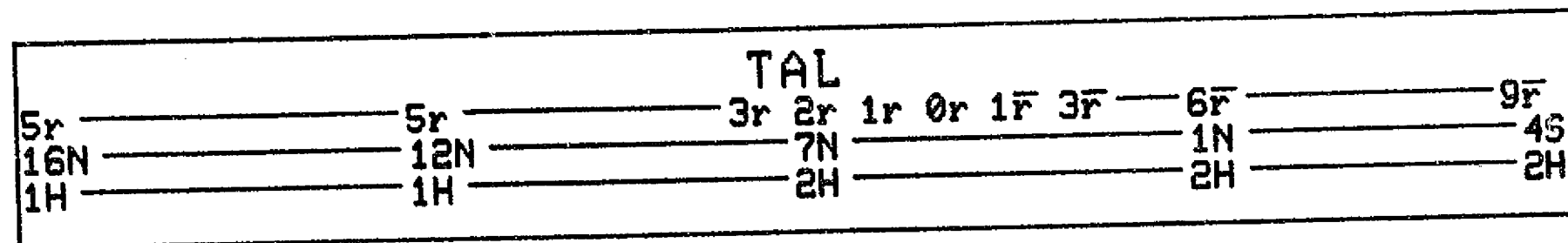


DAY 176 1977

MOON

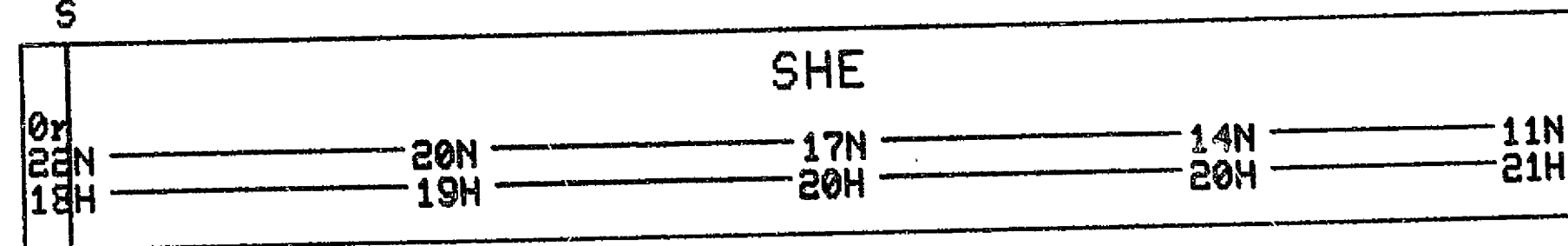


IMP-J

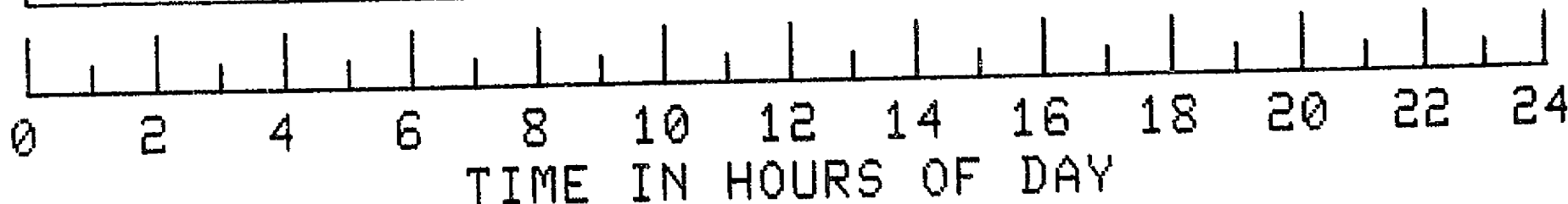
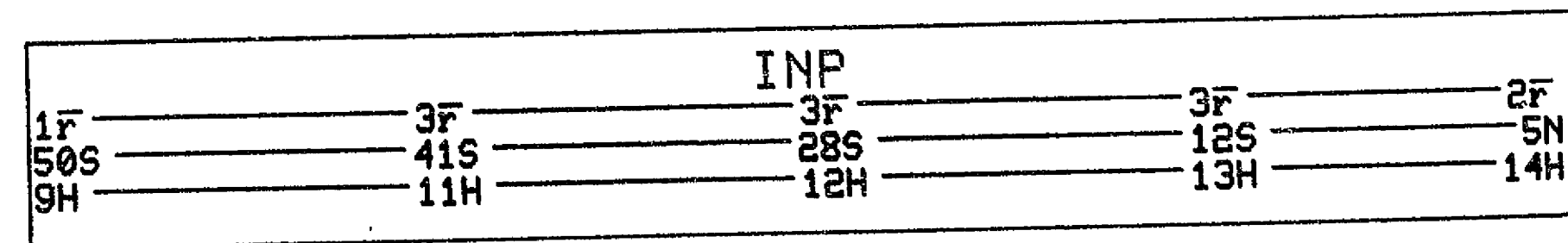


S

IMP-H

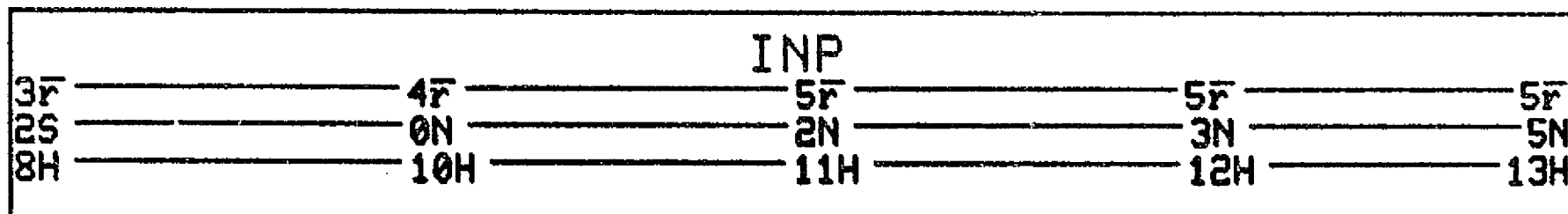


VELA
-5B

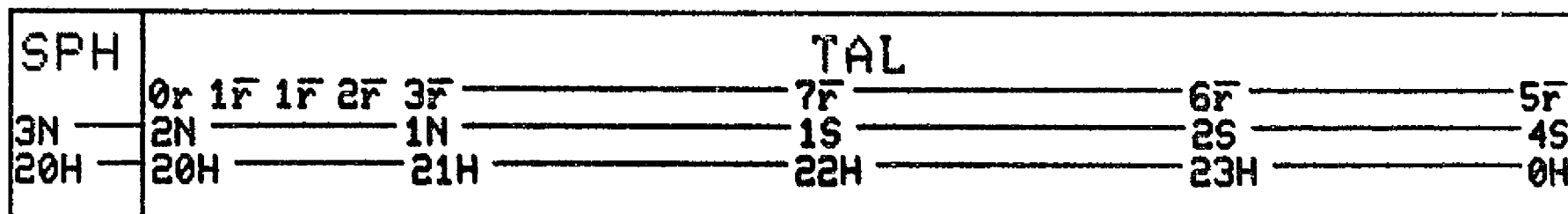


DAY 176 1977

SOL
RAD
-11A

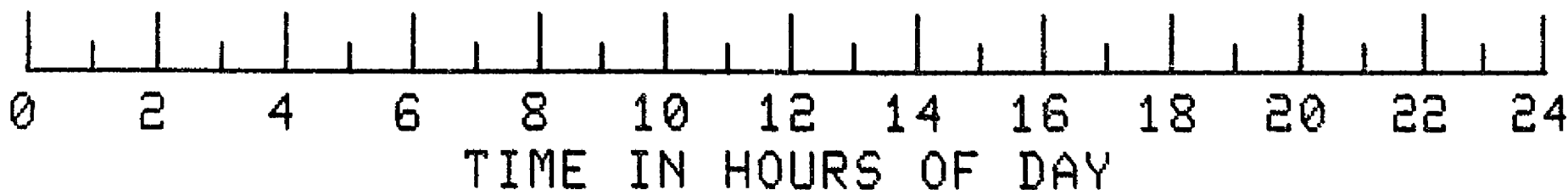
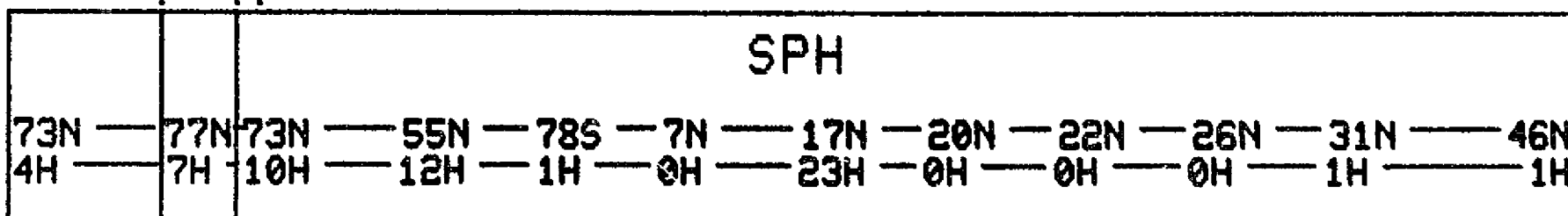


SOL
RAD
-11B

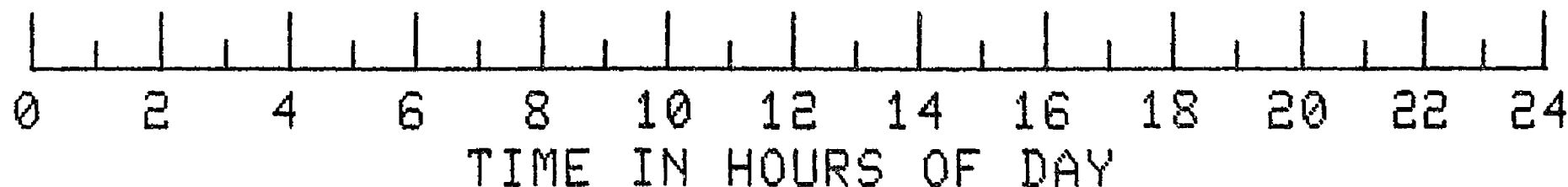
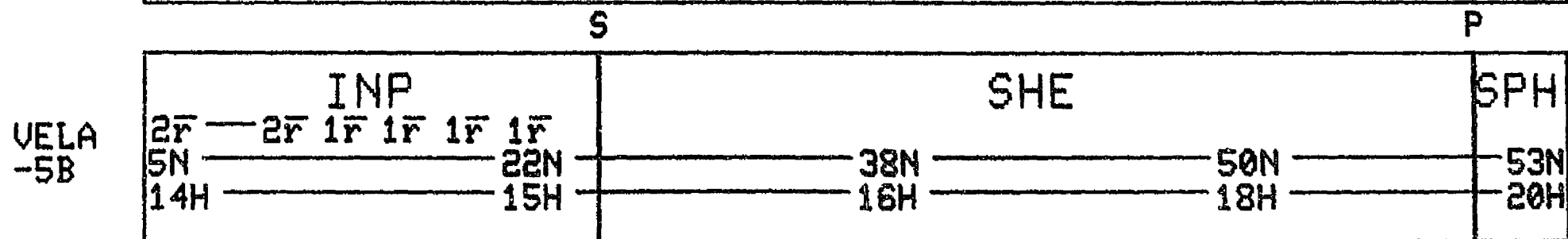
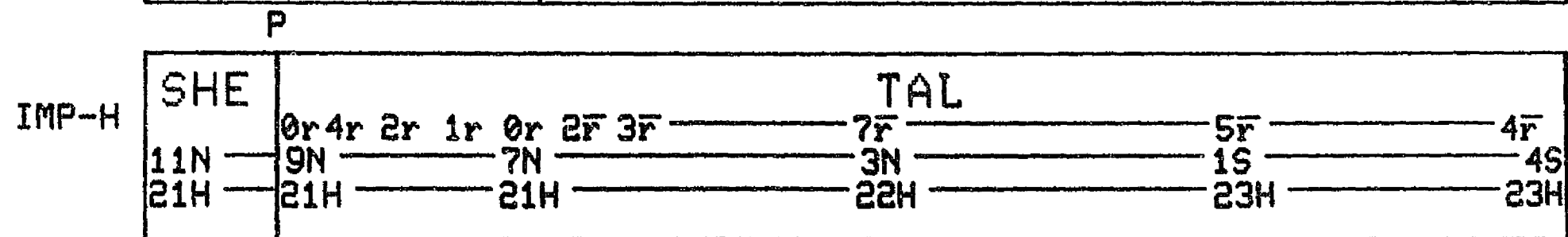
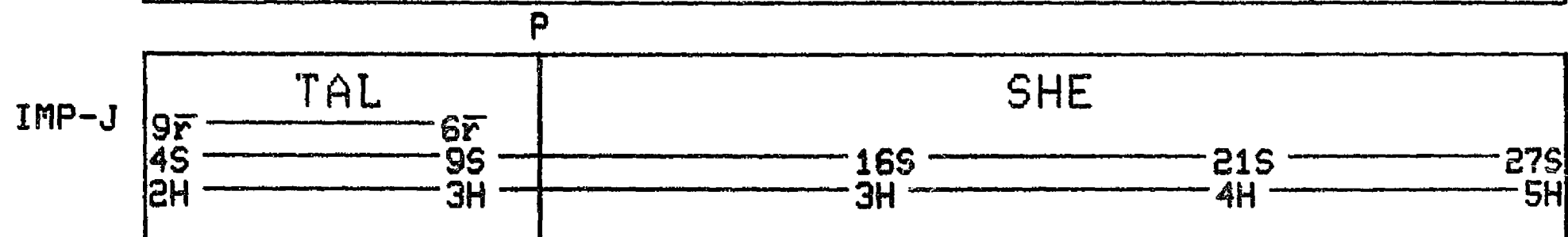
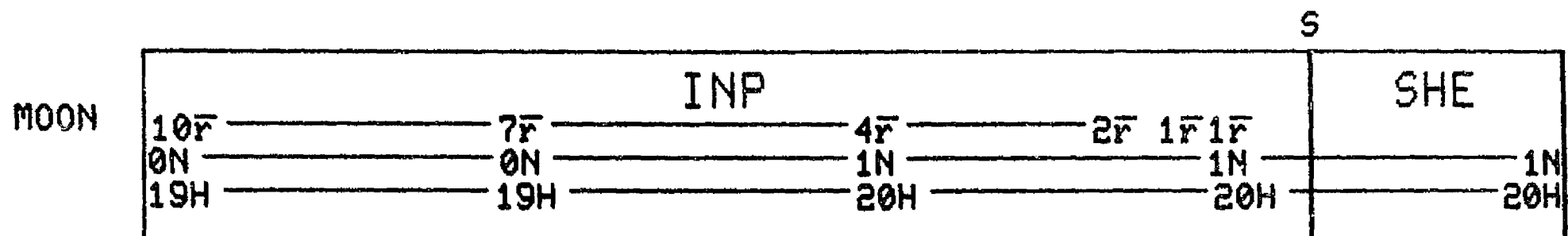


C C

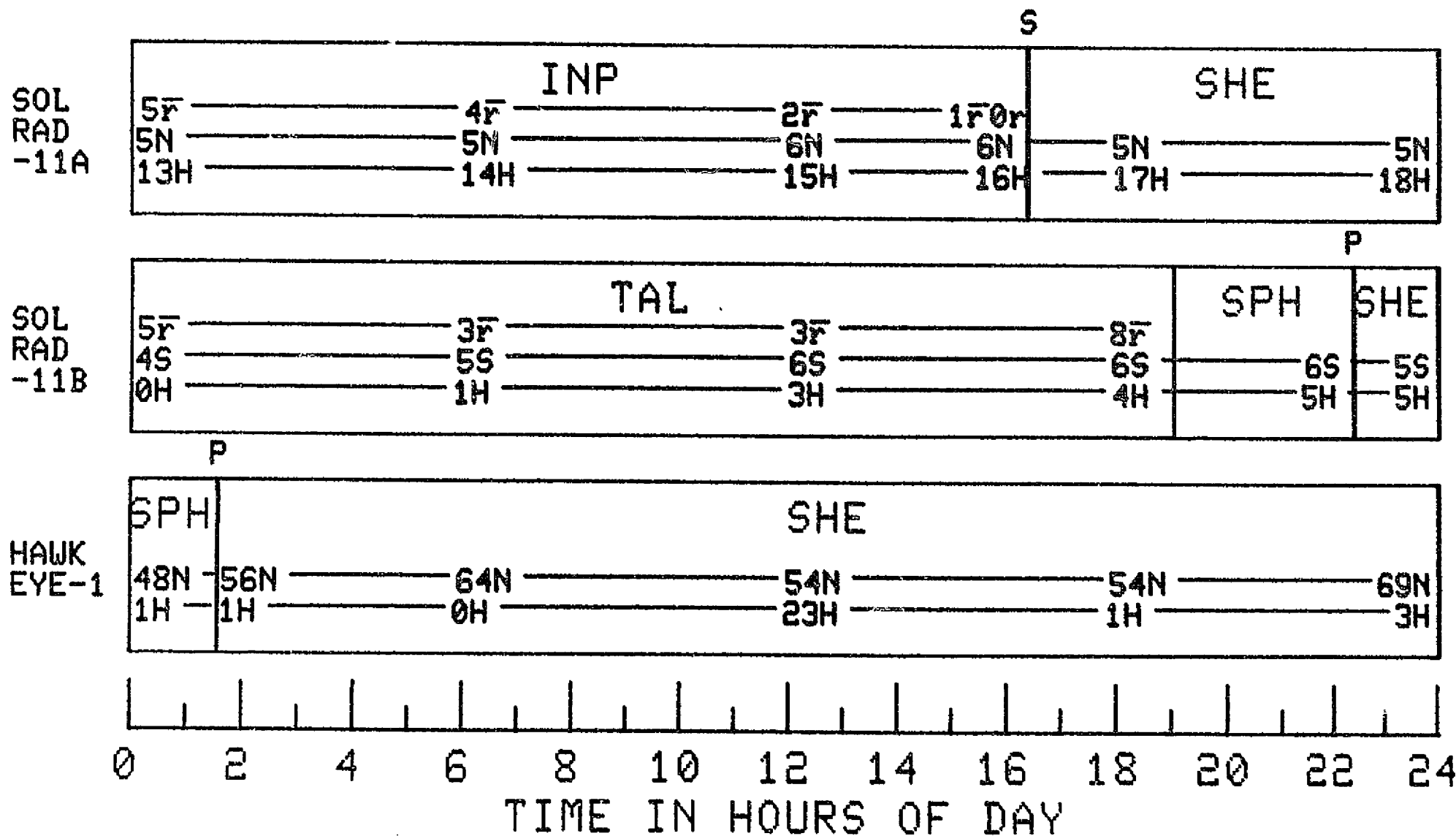
HAWK
EYE-1



DAY 177 1977

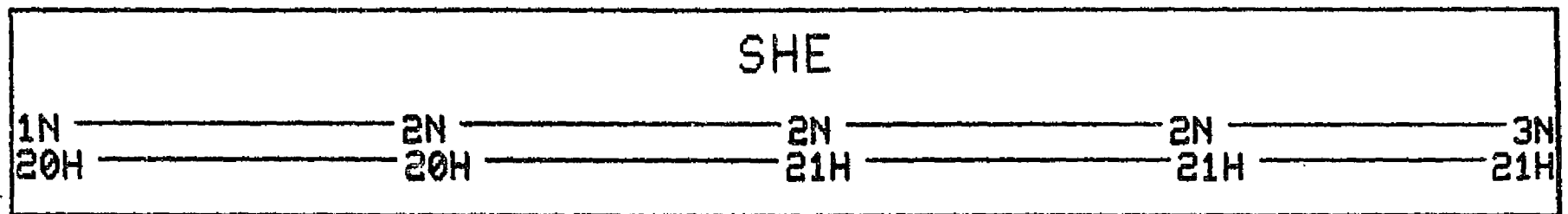


DAY 177 1977



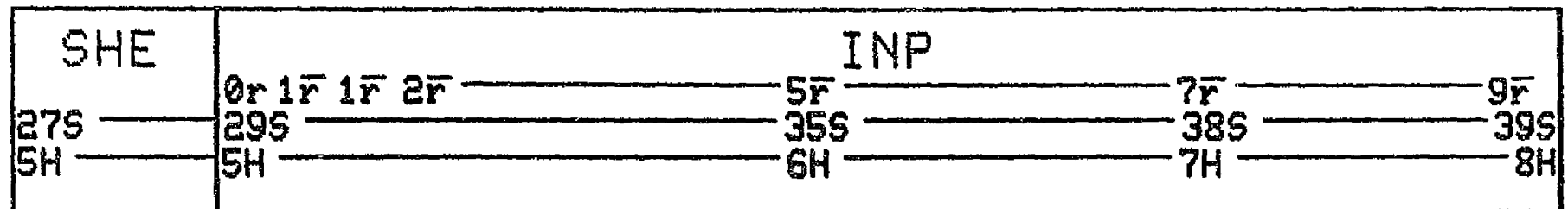
DAY 178 1977

MOON

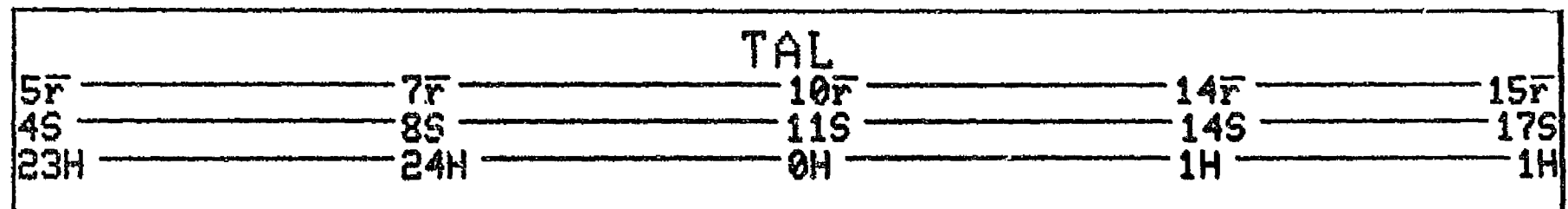


S

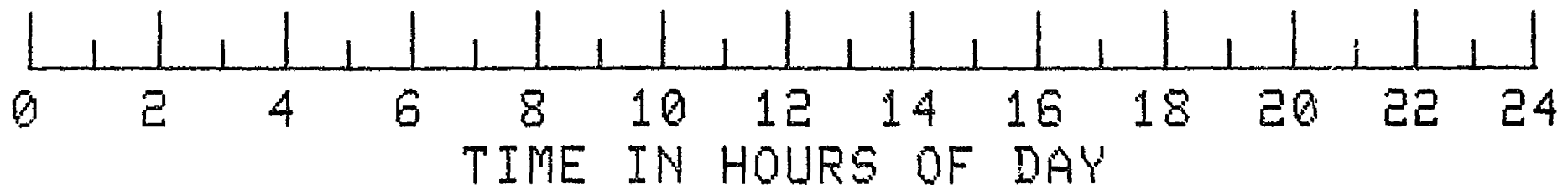
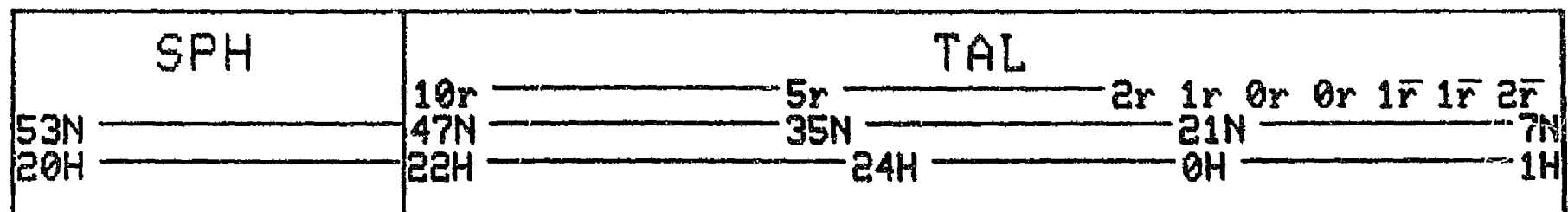
IMP-J



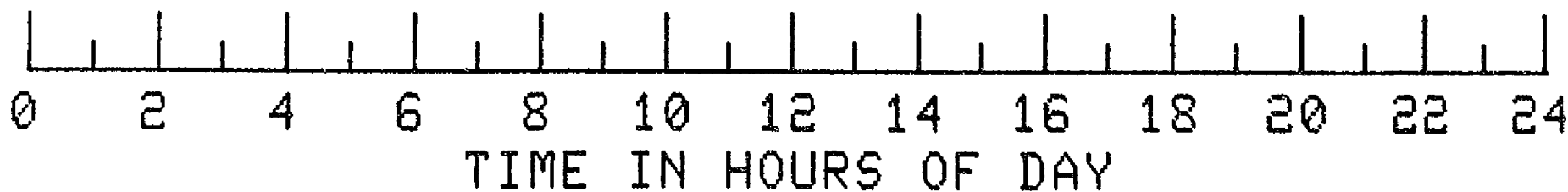
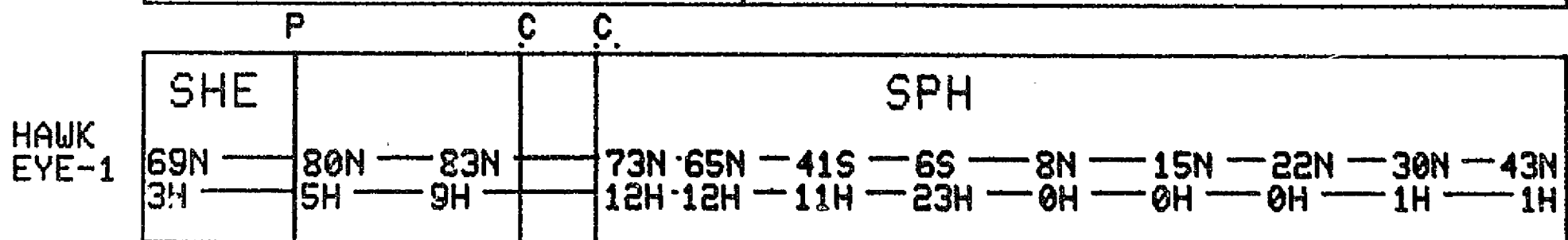
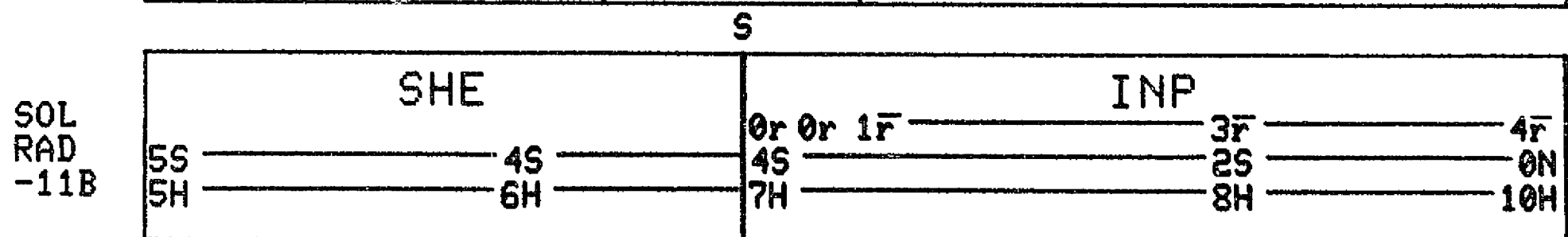
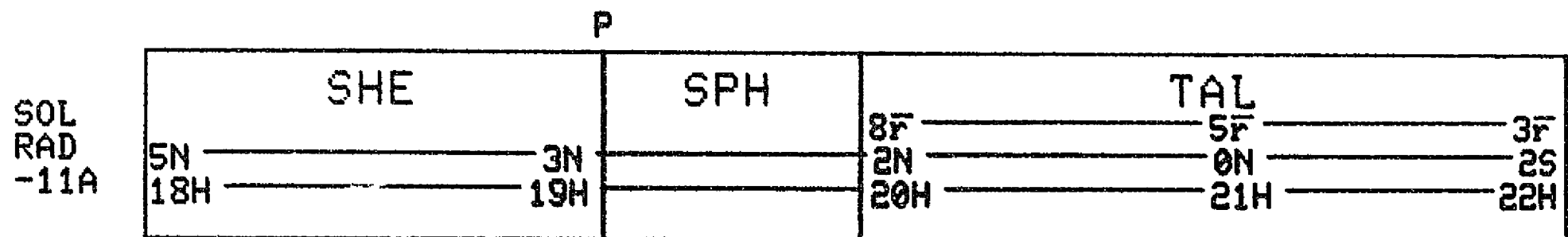
IMP-H



VELA
-5B

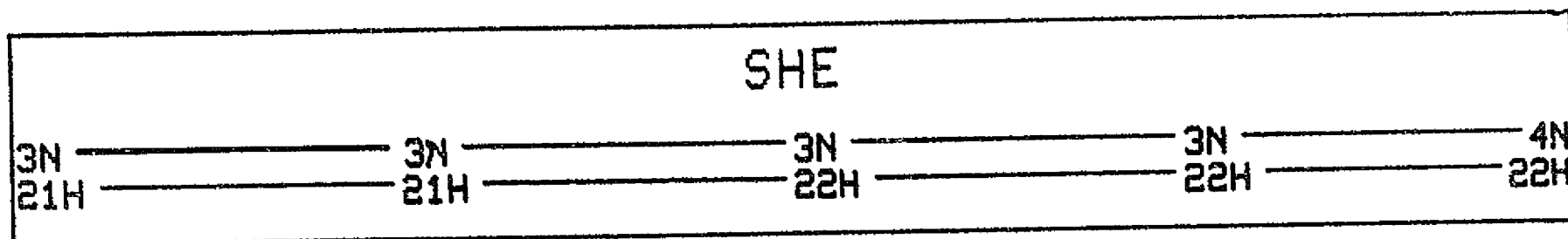


DAY 178 1977

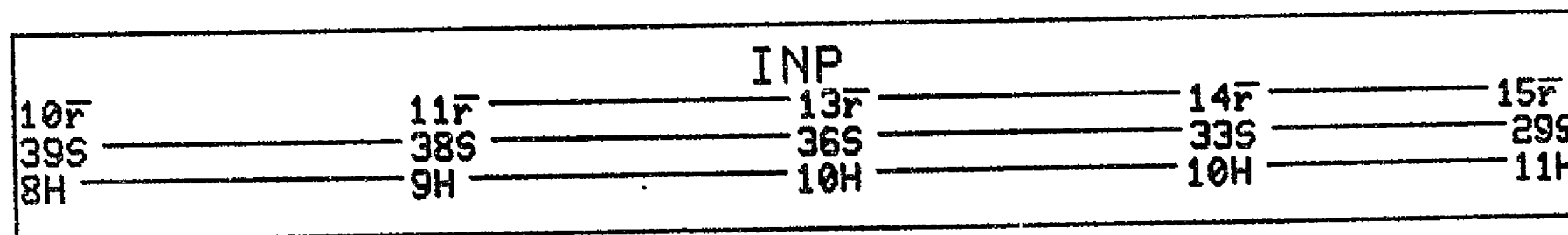


DAY 179 1977

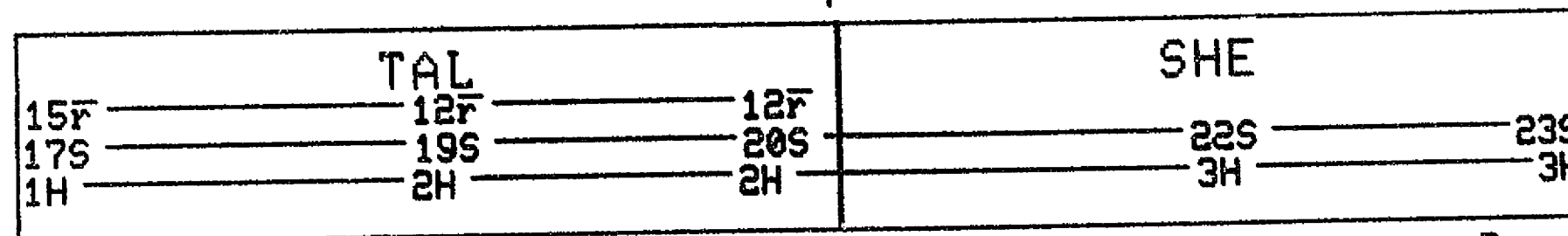
MOON



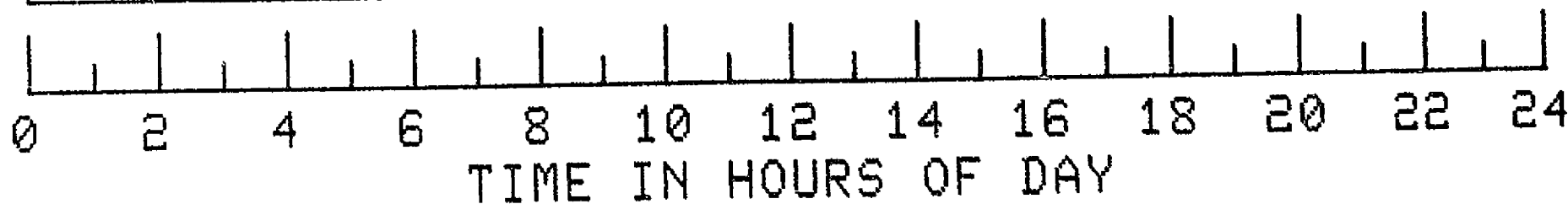
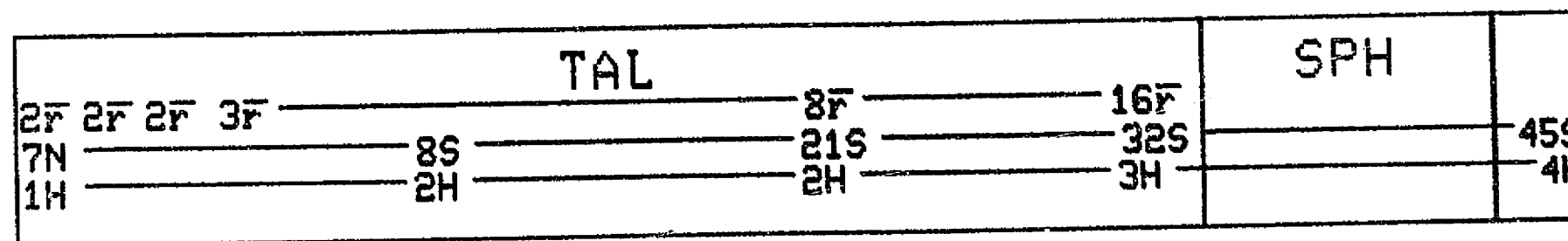
IMP-J



IMP-H

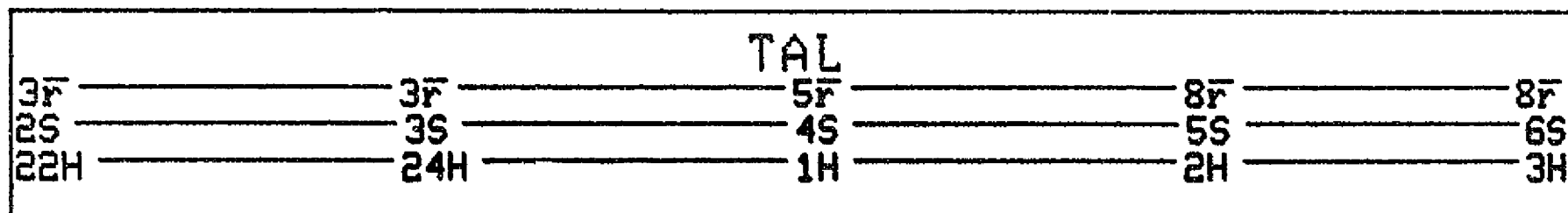


VELA
-5B

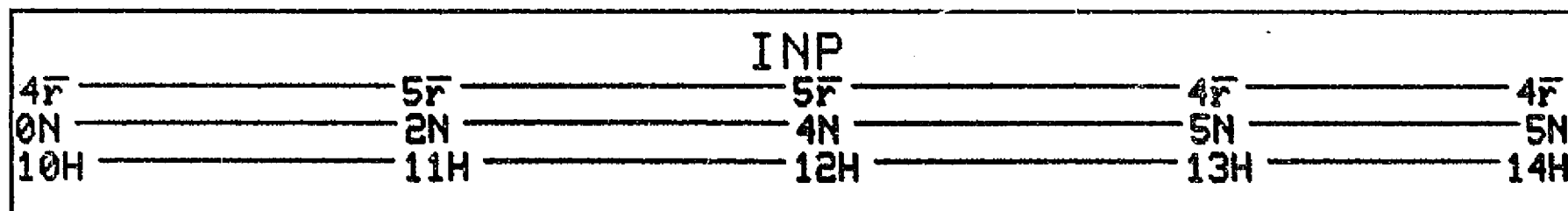


DAY 179 1977

SOL
RAD
-11A

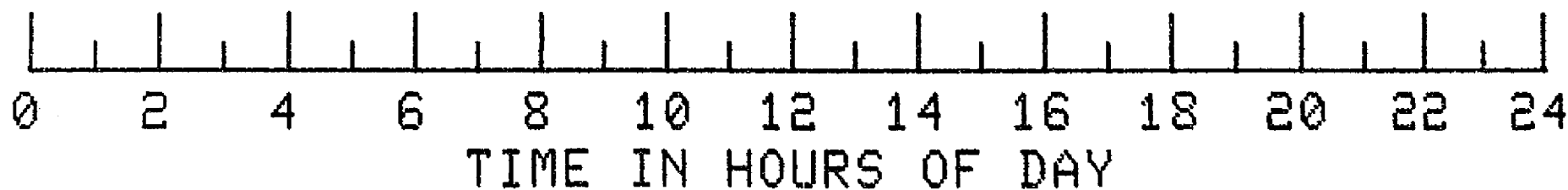
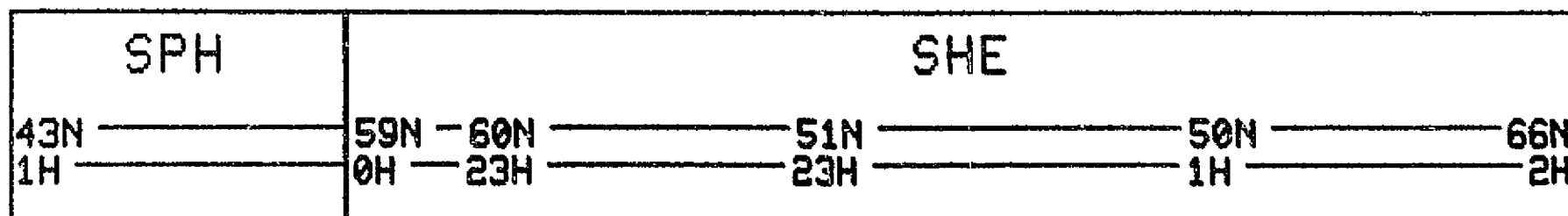


SOL
RAD
-11B



P

HAWK
EYE-1



DAY 180 1977

P

MOON

| SHE | | | TAL | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 4N | 4N | 4N | 6r | 4r | 2r | 1r | 0r | 1r | 2r |
| 22H | 22H | 22H | 4N | 4N | 4N | 4N | 4N | 4N | 4N |
| | | | 23H | 23H | 23H | 23H | 23H | 23H | 23H |

IMP-J

| INP | | | | |
|-----|-----|-----|-----|-----|
| 16r | 17r | 18r | 18r | 19r |
| 29S | 24S | 20S | 15S | 10S |
| 11H | 12H | 12H | 12H | 13H |

S

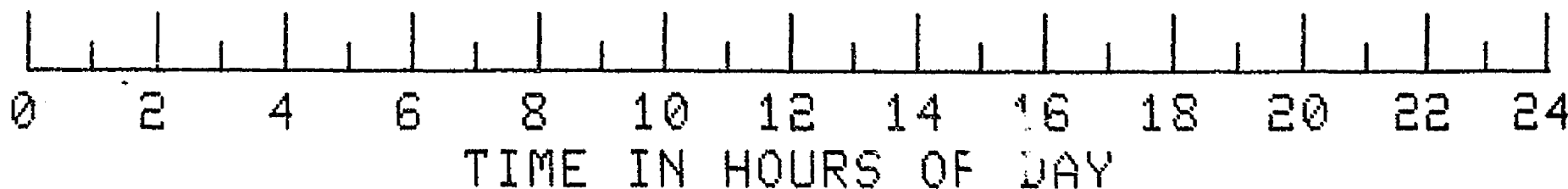
IMP-H

| SHE | | | INP | | |
|-----|-----|-----|-----|-----|-----|
| 23S | 24S | 24S | 0r | 1r | 2r |
| 3H | 4H | 4H | 25S | 25S | 24S |
| | | | 4H | 4H | 5H |

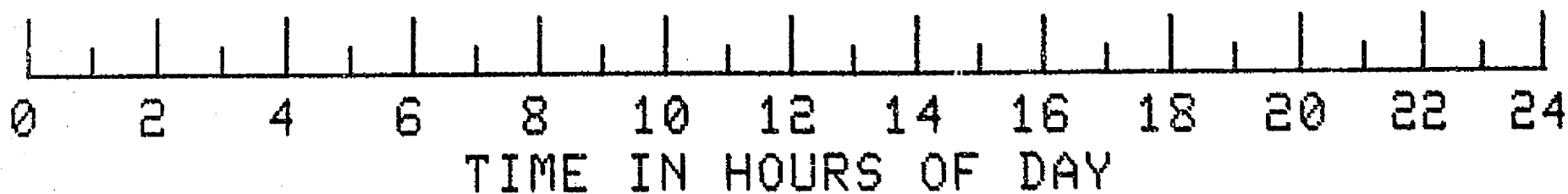
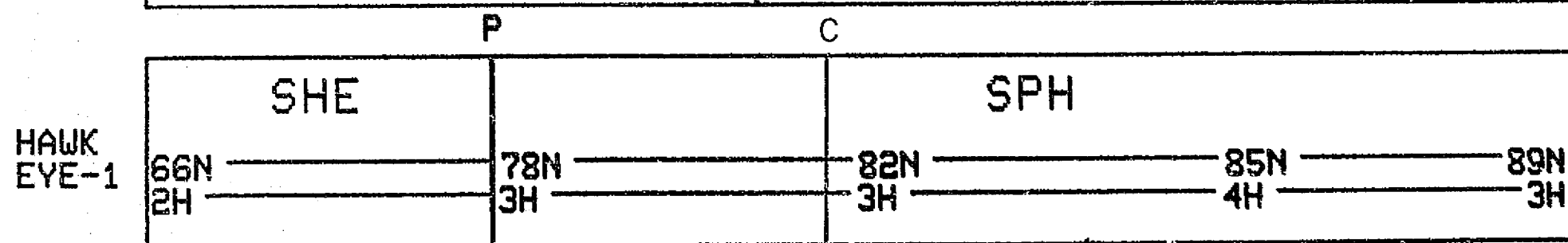
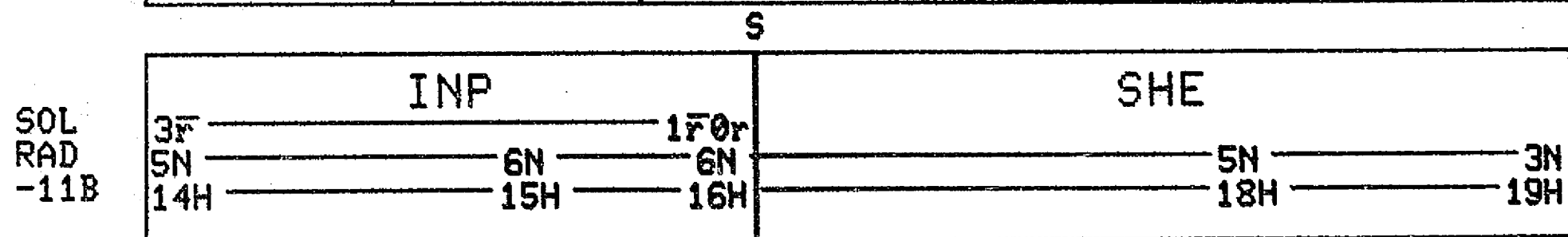
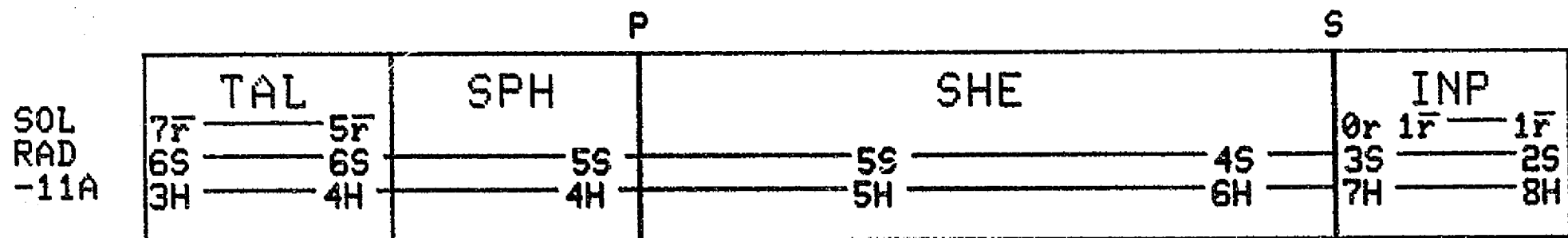
S

VELA
-5B

| SHE | | INP | | |
|-----|-----|-----|-----|-----|
| 45S | 52S | 0r | 1r | 2r |
| 4H | 6H | 53S | 47S | 36S |
| | | 8H | 10H | 11H |

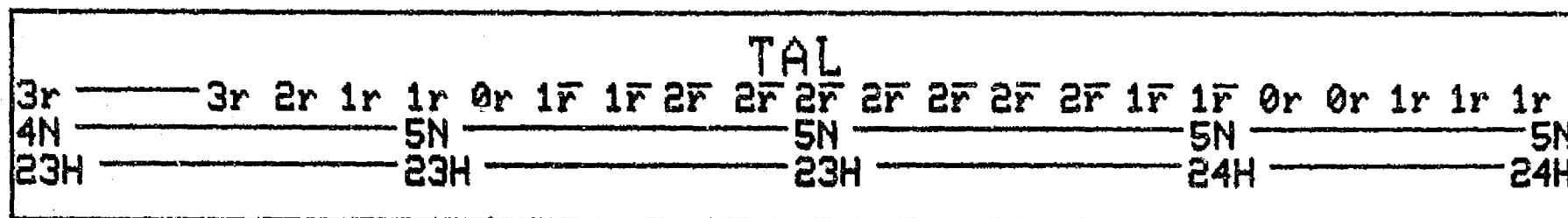


DAY 180 1977

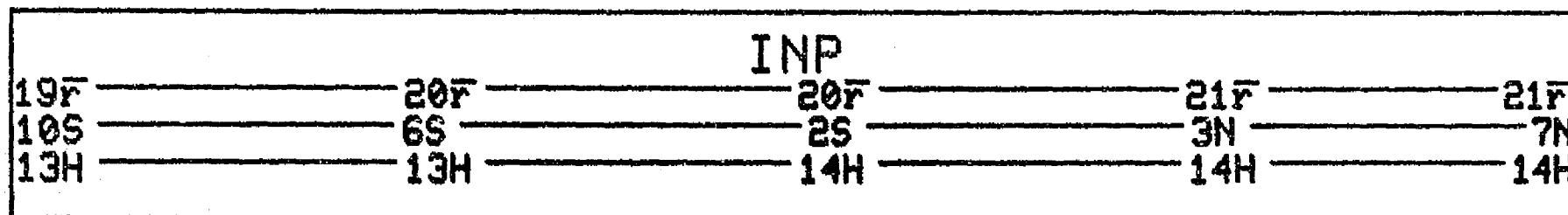


DAY 181 1977

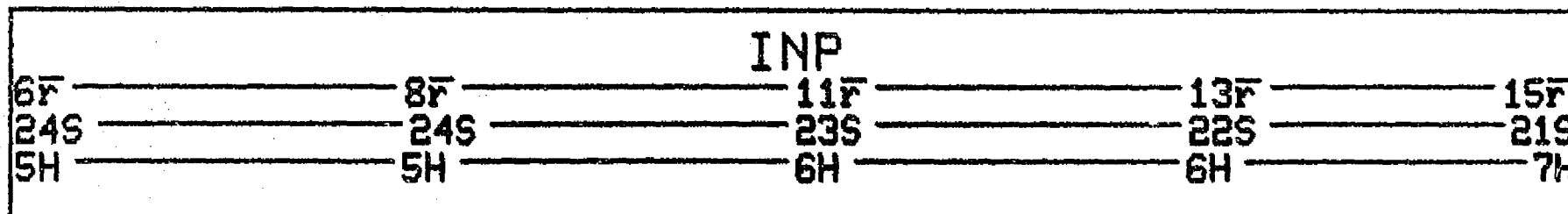
MOON



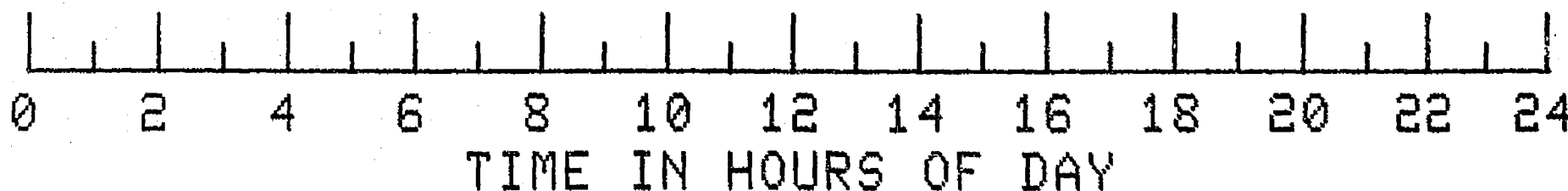
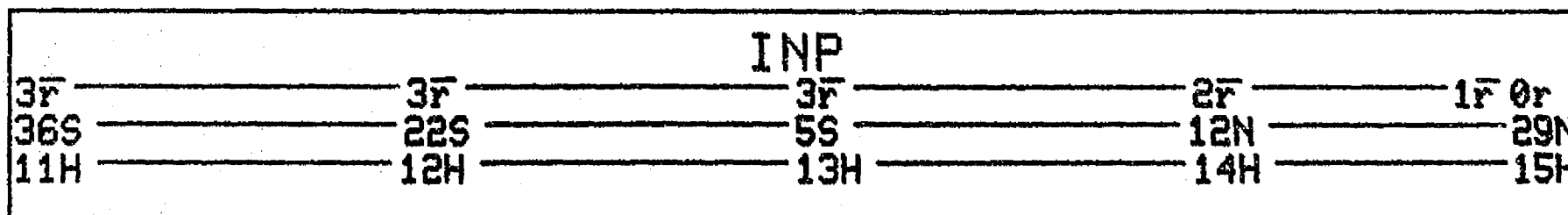
IMP-J



IMP-H



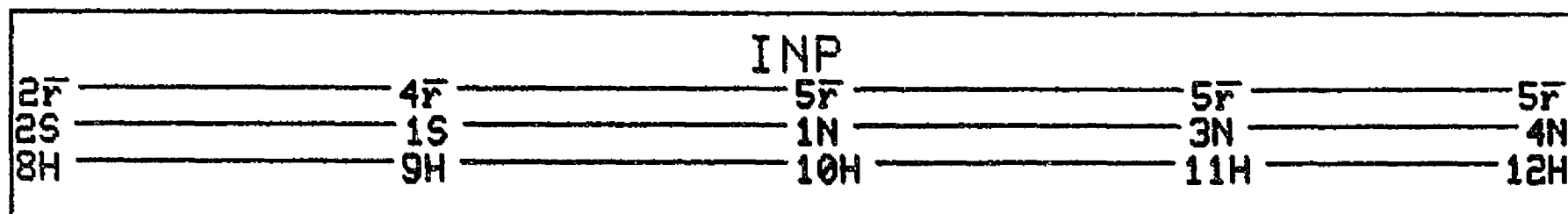
VELA
-5B



CS

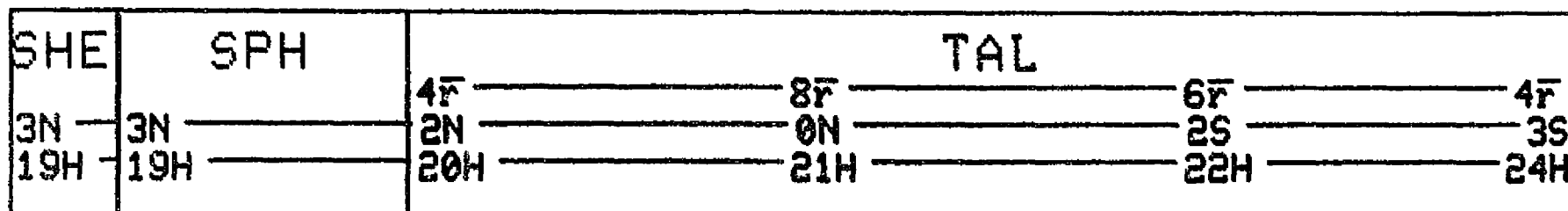
DAY 181 1977

SOL
RAD
-11A



P

SOL
RAD
-11B



P

HAWK
EYE-1

